



An assessment of hypertension related knowledge levels among hypertensive patients attending tertiary health care facilities in Jos.

Adeniyi Michael Adebayo¹, Okunlola Charity Rotkangmwa² and David Shalkur³

¹Department of Pharmaceutics and Pharmaceutical Technology, ³Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmaceutical Sciences, University of Jos, Jos, Nigeria.

²P. O. Box 6818 Anglo-Jos, Jos, Nigeria

Received: 07-01-2015 / Revised: 03-02-2015 / Accepted: 04-02-2015

ABSTRACT

The objective of the study is to assess hypertension related knowledge levels among hypertensive patients attending tertiary healthcare facilities in Jos, Nigeria. The study was conducted among consenting hypertensive patients in Plateau State Specialist Hospital, and Bingham University Teaching Hospital, both in Jos with the aid of a pretested structured questionnaire. It was a descriptive cross sectional survey of 275 hypertensive patients and systematic random sampling method was adopted. The response rate was 100% because they were researchers administered. Data was analyzed with simple percentage, mean and standard deviation, and chi-square statistical tools with the aid of Statistical Package for Social Sciences (SPSS) version. 20.0. One hundred and sixty-two (59%) of hypertensive patients in the study had a significantly high knowledge of hypertension ($p = 0.003$). Their knowledge about drugs was very poor and the only drug they could remember (about 44%) was moduretic (amiloride hydrochloride 5mg and hydrochlorothiazide 50mg). Findings revealed that 63% believed that hypertension is inherited, 81% believed it to be caused by witches and wizards, 95% knew that hypertension is detected by blood pressure measurements, 93% knew hypertension could be managed effectively with drugs while 70% believed that treatment could be stopped when symptoms are absent, 55% believed it was possible to cure hypertension permanently and about 50% said that a blood pressure reading of 115/75mmHg was high. The findings above revealed some knowledge deficits among study population. Therefore, there is need for more enlightenment and proper education of hypertensive patients about the disease and other relevant issues relating to the disease.

Keywords: Hypertension, Antihypertensive therapy, Hypertension related knowledge and hypertensive patients



INTRODUCTION

Hypertension is the commonest non-communicable disease and the leading cause of cardiovascular disease in the world [1]. It remains a major global public health challenge that has been identified as the leading risk factor for cardiovascular morbidity and mortality [2]. According to the World Health Organization (WHO) Global Brief on Hypertension [3], hypertension is defined as a systolic blood pressure equal to or above 140mmHg and or diastolic blood pressure equal to or above 90mmHg. Normal levels of both systolic and diastolic blood pressure are particularly important for the efficient function of vital organs such as heart, brain, and kidneys, as well as for overall health and well-being [3]. Therefore, the

prevention, detection, treatment, and control of this condition should receive high priority [4].

The total number of estimated deaths resulting from all types of cardiovascular and hypertensive heart-diseases recorded for Nigeria in 2004 by the World Health Organization was 201,500 and 10,700 respectively placing Nigeria in the 16th position globally [5]. According to Boulle [6], hypertension contributes up to 75% of all strokes and heart attacks and other risk factors combined with high blood pressure that can increase the likelihood of complications include age, smoking, abnormal cholesterol levels, family history of premature heart disease, obesity, diabetes and coronary artery disease. With an increasing adult population, as well as a rising prevalence, Nigeria will experience economic and health challenges

due to the disease if the tide is not arrested [7]. Many people with hypertension are unaware of their condition and among those with hypertension, treatment is infrequent and inadequate [1]. It has been suggested that knowledge about hypertension influences blood pressure control and self-management practices in patients with hypertension [8]. Li *et al* [9] also supports this idea stating that health literacy is related to hypertension management, treatment, and outcomes. According to Alexander *et al* [10], patient knowledge and awareness of blood pressure play important roles in the ability to control hypertension successfully and in the United States, efforts to control hypertension have included increasing public knowledge and awareness especially about the risks associated with uncontrolled blood pressure and these efforts have in part been successful [11].

Unfortunately, most adults due to ignorance of knowledge of hypertension engage in excessive consumption of alcohol, sedentary lifestyles, excessive consumption of sodium, tobacco intake and cigarette smoking, obesity, reduced intake of fruits and vegetables, stress, and consumption of foods rich in cholesterol [2]. A study carried out by Familoni *et al* [12] at Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria demonstrated inadequate knowledge of hypertension in patients with hypertension. In the same study the authors reported that over 11% were aware that hypertension is commonly symptomless condition until effects of targets organ damages are manifested, over 45% believed that headache and about 30% palpitation, were the most common symptoms of hypertension. In a study carried out by Iyalomhe and Iyalomhe [13] on hypertension-related knowledge, attitudes and lifestyle practices at Central Hospital, Auchi, Nigeria, 61% knew hypertension to be high blood pressure, 53% agreed that it was hereditary, 79% did not believe hypertension is caused by witches and wizards, 100% affirmed hypertension could not be caused by certain drugs or condiments. Other findings from the same study are: 91% felt the presence of hypertension indicated serious morbidity because of the dangers of complications, 42% knew some of the risk factors such as excessive alcohol consumption, smoking or obesity, and 58% did not know; 74% attested to the fact that hypertension is correctly detected by blood pressure measurement, and only 30% knew at least one treatment drug. The conclusion here is that patients' knowledge of hypertension is low. Findings from other studies include: Sanne *et al* [14] at the medical center of Louisiana in New Orleans, USA reported that hypertension knowledge was good and 92% of the participants reported a family history of hypertension; Zungu

et al [15] in a study in Botswana in their report said 78% of the participants stated that their biological parents had hypertension; Mahajan *et al* [16] in Mumbai, India, reported that 84% had a poor score in the area of knowledge, a fact attributed to illiteracy and low socio-economic class of patients, knowledge was more deficient in females than males; Busari *et al* [17] in a research conducted in Ido-Ekiti, Nigeria reported that 47%, less than half, showed good knowledge of hypertension, 59% possessed good knowledge of hypertensive drugs, knowledge of hypertension was better in women than in men, 79% of participants with good knowledge of hypertension had at least primary school education and the conclusion here was that majority of hypertensive patients had poor knowledge. In another study carried out by Katibi *et al* [18] in the University of Ilorin Teaching Hospital, Nigeria, it was discovered that knowledge of participants on possible complications of high blood pressure was poor as up to 60% of the patients sampled could not mention 3 possible complications and only 7% could give up to five different complications. With regard to exercise, only 52% knew that exercise is beneficial for the control of high blood pressure and about 45% were ignorant. In the study conducted by Morgado *et al* [19], it was observed that clinical hospital pharmacists can complement physicians in the management of hypertension, especially in patient hypertension related knowledge.

Not many studies have been carried out in the North Central region of Nigeria pertaining to hypertension related knowledge even though some studies have been conducted on the knowledge of hypertension in many parts of the world including some tertiary healthcare facilities in Nigeria. This study was carried out to assess hypertension related knowledge among hypertension patients in tertiary healthcare facilities in Jos, Plateau State, Nigeria with a view to improving the management outcome for hypertensive patient

MATERIALS AND METHOD

Settings: Plateau state is one of the 36 states in Nigeria. It is in the North-central region of Nigeria and its capital, Jos, comprises mainly three of the 17 local government areas in the state with a population of about 836,910 according to the 2006 census report of the National Population Commission (NPC), published in 2010 [20]. There are more than 50 ethnic groups in Plateau state and that fact along with its unique geographical features makes it a mosaic of socio-cultural activities in Nigeria. The study sites are: Plateau State Specialist Hospital and Bingham University Teaching Hospital, both in Jos.

Study Design: The study was a descriptive cross sectional survey of the hypertensive outpatients in two tertiary health care facilities in Jos, Nigeria,

Inclusion and Exclusion Criteria: All hypertensive patients aged 18 years and above attending the medical outpatient department (MOPD) who gave consent were included in the study while Patients under 18 years of age, pregnant women and those who declined to give their consent were excluded from the study.

Sampling Method: The systematic random sampling method was used to select participants in the study.

Ethical Clearance: Approval for carrying out the study was obtained from Health Research and Ethics Committees of Plateau State Specialist Hospital and Bingham University Teaching Hospital, both in Jos.

Data Analysis and Presentation: The questionnaires were analyzed with the aid of Statistical Package for Social Sciences (SPSS) version 20.0 software to generate descriptive statistics. The data collected was analyzed with the frequency, simple percentage, mean and standard deviation, and the Chi-square statistical tools and results presented in texts, tables and figures.

RESULTS

A total of 275 questionnaires, administered to patients of Bingham University Teaching Hospital and Plateau State Specialist Hospital were valid, making a response rate of 100%, and this was because they were researchers administered.

The results of the socio-demographic characteristics of participants are as follows: The overall mean age of participants (N = 275) was a 60.57 ± 12.94 (Mean \pm SD) year. The minimum age was 28 years, while the oldest participant was 90 years. Out of the total number of study participants (N = 275) there were a total of 146 (53%) males and 129 (47%) females that participated in the study. The majority of the participants were married (82%, n = 226), while 42 (15%) of the participants were widowed and about 3% were single/divorced. Results indicated that 34.5% of the study participants had no formal education. 15.3% had primary education, 13.8% had secondary education, and a further 30.9% had tertiary education, while 5.5% of the study participants had vocational training. The occupational status of the study participants revealed that 23% were civil servants, 17% were farmers, 26% were engaged in

business, and 34% of the participants had other occupations.

Table 1 revealed that 66% of the study participants indicated that they had a history of hypertension in their family while 64% of the participants indicated knowledge of the hypertensive drug that they are currently using. Table 1 shows history of hypertension in participants' family and knowledge of the hypertensive drugs that they are currently using.

On hypertension knowledge, 95% knew that hypertension is high blood pressure. 63% of the study population believed that hypertension is inherited, while 81% believed it to be caused by witches and wizards. 95% said yes to the fact that hypertension is detected by blood pressure measurements. 93% knew hypertension could be managed effectively with drugs while 70% believed that treatment could be stopped when symptoms are absent. These results were statistically significant except for the 50% who said that a blood pressure reading of 115/75mmHg was high and the 55% who said it was possible to cure hypertension permanently.

On hypertension related knowledge and source of information 18% agreed that they obtained their information on hypertension from mass media while 71% disagreed and 11% were not sure. Further chi square testing showed that this was statistically significant ($\chi^2 = 173.331$; $p = 0.0005$). 27% agreed their information on hypertension came from government agencies while 62% disagreed and again 11% were not sure. 68% disagreed that they obtained their information on hypertension from books and magazines, while 26% agreed and 6% were not sure. Forty per cent agreed that the causes of all types of hypertension is usually known, while 27% disagreed, which was statistically significant. Seventy-four percent of respondents agreed that one can have hypertension without falling sick while 16% disagreed and 10% were not sure. With regard to whether hypertension can be cured completely by the use of drugs, 45% agreed, 36% disagreed and 19% were not sure. Concerning the hypertension treatment goal, 56% agreed that the goal was a blood pressure reading of less than 140/90 mmHg, while 13% disagreed and 31% were not sure. Of those who disagreed or agreed with any of these questions, Chi-square testing revealed the results to be significant. Seventy-five percent agreed that their hospital provided good education on hypertension and 93% of those respondents agreed that the information provided helped them in handling the disease, while only 7% disagreed that the information had been helpful. On the other hand, 19% disagreed that their hospital gave them good education and 100% of these patients who disagreed indicated

agreement with the desire to see an improvement in educating them on their disease. Eighty-two per cent agreed that their physicians counseled them on their management plan while 10% disagreed and 8% were not sure. Ninety-seven per cent agreed that the information given to them by their physicians helped them in handling the disease but of those who disagreed that their physicians counseled them, 96% agreed that they would like to see an improvement in educating them as patients on the disease. Of those who disagreed or agreed with any of these questions Chi-square testing revealed the results to be significant.

68% agreed that pharmacists counseled them on the drugs and their side effects of their drugs and of that number, 97% agreed that the information given them by their pharmacists helped them in handling the disease. On the other hand, while 23% disagreed and 9% were not sure. Ninety-eight per cent of those who disagreed that their pharmacists counseled them on the drugs and their side effects agreed that they would like to see an improvement by pharmacists on educating them on their disease. Of those who disagreed or agreed with any of these questions, Chi-square testing revealed the results to be significant.

Results indicated there was no significant factor that affects hypertensive related knowledge; gender ($p=0.622$), marital status ($p=0.900$), level of education ($p=0.288$), occupation ($p=0.923$), and duration of hypertension ($p=0.097$). The details are shown in table 2.

Regarding knowledge of symptoms of hypertension among hypertensive patients, results revealed that 91% of the study participants indicated that they had knowledge of the symptoms of hypertension.

Figure 1 shows further results on their knowledge of symptoms of hypertension. On the issue of knowledge of complications of hypertension, out of the total number of participants, 89% indicated that they were aware of complications that may occur due to hypertension. Figure 2 shows the distribution of complications that may arise due to hypertension. On the knowledge of lifestyle factors that could worsen hypertension, over 60% of the participants were able to identify the following factors: Excessive salt intake, excessive weight, smoking of cigarettes, physical exhaustion, alcohol intake and psychological stress. The details are shown in table 3. Regarding the overall hypertension related knowledge level among hypertensive patients, results revealed that 113 (41%) of the participants had low knowledge of hypertension, while 162(59%) had high knowledge of hypertension. Further Chi-square analysis

revealed that a high proportion of participants significantly had high knowledge of hypertension ($\chi^2 = 8.731$, $p = 0.003$). The details are shown in table 4.

DISCUSSION

The results of hypertension related knowledge levels among hypertensive patients in the study showed that majority of the respondents knew hypertension to indicate high blood pressure. Majority also knew it to be detected through blood pressure measurements. This knowledge was most probably acquired through clinic attendance. Although quite a number could not tell that a blood pressure reading of 115/75 mmHg was normal, this implies that more needs to be done in terms of educating patients on the meaning of systolic and diastolic blood pressure measurements. It is noteworthy though that majority of the respondents knew hypertension is usually inherited; this is most likely because they observed it in some of their family members. Zungu *et al* [15] in their study indicated a possible contribution of family disposition to the prevalence of hypertension, also in line with the fact that known family history is one of the risk factors for hypertension as indicated by Boulle [6].

It is unfortunate though that a significant number of respondents currently on antihypertensive therapy perhaps due to inadequate education and what most have been taught to believe from childhood by elders, still believed that hypertension could be caused by witches and wizards. This differs from findings by Iyalomhe & Iyalomhe [13] where 78.8% believed that hypertension was not caused by witches and wizards. This shows that a lot more needs to be done in tertiary health care facilities in Jos to educate patients on hypertension so that they are equipped with more knowledge, which would enable them cope well with the disease. Majority of the respondents disagreed with the fact that they obtained information on hypertension from mass media and government agencies and this was significant. This finding from this study implies that the government still has an important role to play in terms of health education through mass media, publications, as well as in jingles and even door to door enlightenment campaigns. Majority in the study agreed that the causes of hypertension are usually known.

Even though many believed that hypertension can usually be cured by the use of drugs, most of the participants knew the treatment goal of hypertension and agreed that their hospital gave them a good education on hypertension which has helped them in handling the disease. They also

admitted that their physicians counseled them on their management plan and their pharmacists educated them on the drugs as well as some of the possible side effects. This aligns with findings from Morgado *et al* [19], that clinical hospital pharmacists can complement physicians in the management of hypertensive patients. From the results, majority of the respondents were able to identify at least four major complications of hypertension viz: stroke, death, paralysis and kidney failure. This finding contradicts the result reported by Katibi *et al* [18] in a study at Ilorin, Nigeria and is in line with the research result of Familoni *et al* [12] at Sagamu where over 50% of the respondents recognized stroke, heart and renal failure as examples of complications of hypertension.

Regarding factors that could worsen hypertension, more than half of the respondents agreed that the following could worsen hypertension: excessive salt intake, excessive weight, smoking, alcohol intake, physical exhaustion and psychological stress. The results also indicate a significantly high proportion of participants had high knowledge of hypertension. This finding differs from studies by Iyalomhe & Iyalomhe [13] and Busari *et al* [17], who found hypertension knowledge to be low among hypertensive patients in Auchi and Ilorin respectively.

From the study, gender, marital status, level of education, and duration of hypertension were not significant factors that affected participants' hypertension knowledge levels. According to Busari *et al* [17], patients' level of education is generally known to have a positive influence of understanding of specific health education programmes and relevant behavior changed techniques. This was not so in this study as participants with non-formal education actually had higher than expected knowledge, followed by those with tertiary, vocational, and secondary education. This could possibly be because those with non-formal education have the tendency to listen more keenly to what health professionals and caregivers tell them as well as take instructions more seriously. It is also possible that these patients were more likely to ask questions or clarifications from their health care providers especially during the health talks. Findings from this study also differ from Li *et al* [9], where marital status and education were factors related to hypertension management, treatment and outcomes. Although males, including those who were married, had a

higher knowledge of hypertension in this study, these were not significantly related to the level of knowledge possessed by the participants. Concerning knowledge of symptoms of hypertension, majority of the study participants had knowledge of the symptoms of hypertension and mentioned headache as the major symptom. This is similar to the study by Iyalomhe and Iyalomhe [13] where majority also had knowledge of the symptoms of hypertension although a smaller percentage listed headache as a major symptom. This finding also align with the findings of Familoni *et al* [12] where they reported that over 45% believed that headache and about 30% palpitation were the most common symptoms of hypertension.

The major limitation of this study was that the questionnaire was designed in English and translated for those study participants who could not speak or understand English fluently as the questionnaires were being administered. Some technical words might not have been translated appropriately into the language of the study participants, be it Hausa, Mwaghavul(Mangu LGA people) or Pidgin English.

The impacts of the study are: it has confirmed some previous claims that hypertensive patients believe that hypertension is hereditary; that they are able to identify some major complications of hypertension and their high knowledge of symptoms of hypertension. It is now confirmed that there are lots of knowledge gaps among hypertensive patients in Jos especially in the area of stopping treatments once symptoms are abated, their strong belief that witches and wizards are responsible for hypertension and not knowing the level of blood pressure that can be termed high or low.

CONCLUSION

Following the objective set for this study, it was shown that hypertension related knowledge levels among hypertensive patients attending tertiary healthcare facilities in Jos were significantly high. The stakeholders in these hospitals should continue the good work they are doing and effort should be made to improve on health education and information so as to fill knowledge deficits in the areas that patients are deficient in. Another study can be replicated to find out the factors that affect hypertension related knowledge to confirm or rebut the findings.

Table 1: History of hypertension and knowledge of the hypertensive drugs that they are currently using

	No		Yes	
	Frequency	%	Frequency	%
History of hypertension in the family	95	34.5	180	65.5
Knowledge of antihypertensive drug currently used	100	36.4	175	63.6

Table 2: Factors that affect hypertensive related knowledge

	Hypertension Knowledge		Chi-square χ^2	p-value
	Low n (%)	High n (%)		
Gender				
Male	62 (54.9)	84 (51.9)	0.243	0.622
Female	51 (45.1)	78 (48.1)		
Religion				
Christianity	92 (81.4)	136 (84.00)	0.302	0.583
Islam	21 (18.6)	26 (16.0)		
Marital Status				
Single	1 (0.9)	3 (1.9)	0.586	0.900
Married	93 (82.3)	133 (82.1)		
Divorced	1 (0.9)	2 (1.2)		
Widowed	18 (15.9)	24 (14.8)		
Level Of Education				
Non-Formal	39 (34.5)	56 (34.6)	4.990	0.288
Vocational	23 (20.4)	19 (11.7)		
Primary	15 (13.3)	23 (14.2)		
Secondary	4 (3.5)	11 (6.8)		
Tertiary	32 (28.3)	53 (32.7)		
Occupation				
Civil Servant	24 (21.6)	39 (24.1)	0.483	0.923
Farming	18 (16.2)	29 (17.9)		
Business	30 (27.0)	40 (24.7)		
Others	39 (35.1)	54 (19.8)		
Duration of hypertension (Years)				
1-5	36 (33.3)	47 (32.2)	12.102	0.097
6-10	27 (25.0)	55 (37.7)		
11-15	23 (21.3)	26 (17.8)		
16-20	10 (9.3)	12 (8.2)		
21-25	4 (3.7)	2 (1.4)		
26-30	4 (3.7)	4 (2.7)		
36-40	3 (2.8)	0 (0.0)		
>40	1 (0.9)	0 (0.0)		

Table 3: Factors that could worsen hypertension

	Response				Chi-square χ^2	P-value
	No		Yes			
	N	%	n	%		
Excessive salt intake	66	24.0	209	76.0	74.360	0.0005
Excessive weight (being too fat)	106	38.5	169	61.5	14.433	0.0005
Smoking cigarettes	90	32.7	185	67.3	32.818	0.0005
Physical exhaustion	111	40.4	164	59.6	10.215	0.001
Alcohol intake	92	33.5	183	66.5	30.113	0.0005
Psychological stress	92	33.5	183	66.5	30.113	0.0005

Table 4: Overall hypertension related knowledge level

Hypertension Knowledge	Related Observed N	Expected N	Chi-square χ^2	p-value
Low	113	137.5	8.731	0.003
High	162	137.5		
Total	275			

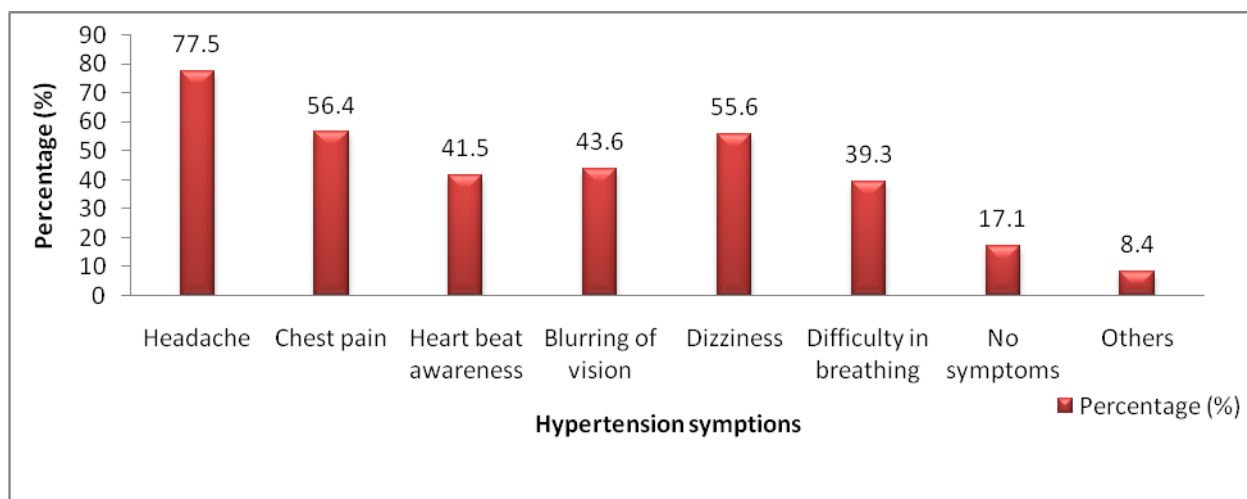


Figure 1: Knowledge of symptoms of hypertension.

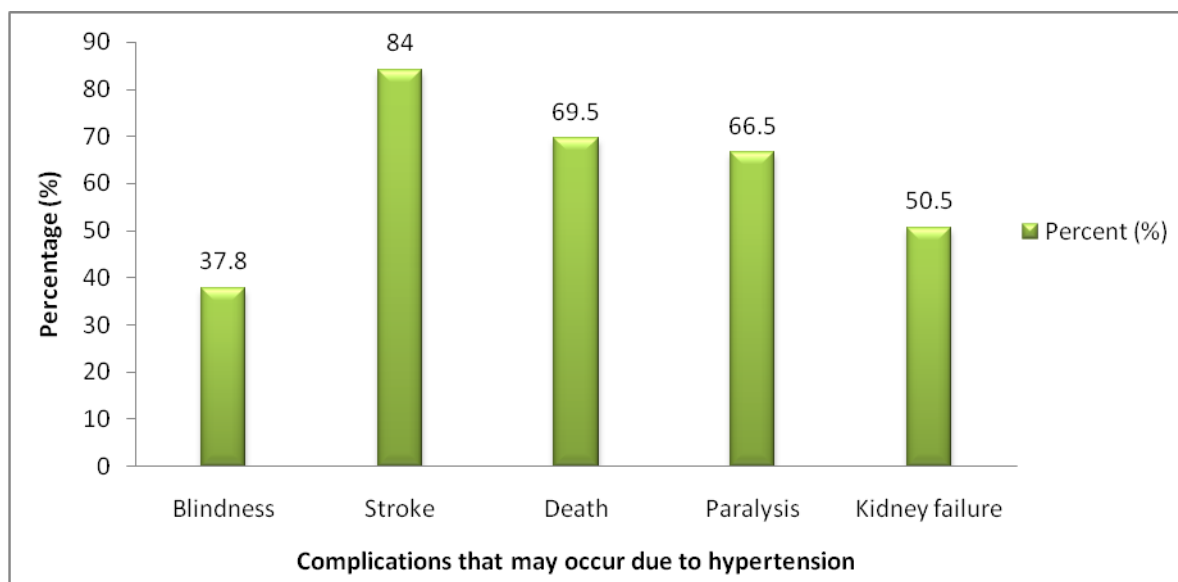


Figure 2: Complications that may arise due to hypertension.

REFERENCES

1. Ulasi, I.I., Anisiuba, B.C. & Ijoma, C.K. (2011) Blood pressure variability and its implications in people of African descent, *Hypertension Research*, 34, (10), 1076-7. <http://dx.doi.org/10.1038/hr.2011.138> [1 April 2014].
2. Onyekwere, O.K., Okwuchi, E.V. & Samuel, E.S. (2013). Knowledge of hypertension among adults in Owerri senatorial zone of Imo state, Nigeria. *Mediterranean Journal of Social Sciences*, 4, (5), 69-79 Available: <http://mcser.org/journal/index.php/mjss/article/view/661> [1 April 2014].
3. World Health Organization (WHO) (2013). A Global Brief on Hypertension, Geneva: World Health Organization.
4. Kearney, P.M., Whelton, M., Reynolds, K., Muntner, P., Whelton, P.K. & He, J. (2005). Global burden of hypertension: analysis of worldwide data. *The Lancet*, 365.217-223, Available: www.thelancet.com [1 April 2014].
5. Osamor, P.E. & Owumi, B.E. (2011). Factors associated with treatment compliance in hypertension in Southwest Nigeria. *J Health Popul Nutr*, 29, (6), 619-628, Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3259725/> [21 June 2014].
6. Boulle, A. (2009). Knowledge of the hypertensive person regarding prevention strategies for coronary heart disease, Unpublished dissertation, University of South Africa, Available: http://uir.unisa.ac.za/bitstream/handle/10500/2608/dissertation_boulle_a.pdf?sequence=1 [14 November, 2013]

7. Ogah, O.S., Okpechi, I., Chukwuonye, I.I., Akinyemi, J.O., Onwubere, B.J., Falase, A.O., Stewart, S. & Sliwa, K. (2012). Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: a review. *World Journal of Cardiology*, 4, (12), 327-340 Available: <http://www.wjgnet.com/1949-8462/full/v4/i12/327.htm> [14 November, 2013]
8. Eugene, V. & Bourne, P.A. (2013). Hypertensive patients: knowledge, self-care management practices and challenges. *Journal of Behavioral Health*, 2, (3), 259-268, Available: <http://dx.doi.org/10.5455/jbh.20130217103511> [19 June 2014].
9. Li, X., Ning, N., Hao, Y., Sun, H., Gao, L., Jiao, M., Wu, Q. & Quan, H. (2013). Health literacy in rural areas of china: hypertension knowledge survey. *Int. J. Environ. Res. Public Health*, 10, 1125-1138, Available: www.mdpi.com/journal/ijerph [21 June 2014].
10. Alexander, M., Gordon, N.P., Davis, C.C. & Chen, R.S. (2003). Patient knowledge and awareness of hypertension is suboptimal: results from a large health maintenance organization. *The Journal of Clinical Hypertension*, V, (IV), 254-260, Available: www.lejacq.com [1 April 2014].
11. Oliveria, S.A., Chen, R.S., McCarthy, B.D., Davis, C.C. & Hill, M.N. (2005). Hypertension knowledge, awareness, and attitudes in a hypertensive population. *J Gen Intern Med*, 20, (3), 219-225, Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1490067/> [14 November, 2013].
12. Familoni, B.O., Ogun, A. & Aina, A.O. (2004). Knowledge and awareness of hypertension among patients with systemic hypertension. *Journal of the National Medical Association*, 96, (5), 620-624, Available: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2640651/pdf/jnma00870-0029.pdf?origin=publication_detail [14 November, 2013].
13. Iyalomhe, G.B.S. & Iyalomhe, S.I. (2010). Hypertension-related knowledge, attitudes and life-style practices among hypertensive patients in a sub-urban Nigerian community. *Journal of Public Health and Epidemiology*, 2, (4), 71-77, Available: <http://www.academicjournals.org/jphe> [1 April 2014].
14. Sanne, S., Muntner, P., Kawasaki, L., Hyre, A. & DeSalvo, K.B. (2008). Hypertension knowledge among patients from an urban clinic, *Ethnicity and Disease*, 18, 42-47, Available: <http://www.mx1.ishib.org/journal/18-1/ethn-18-01-42.pdf> [19 June 2014].
15. Zungu, L.L., Djumbe, F.R. & Setswe, K.G. (2013). 'Knowledge and lifestyle practices of hypertensive patients attending a primary health care clinic in Botswana', *African Journal for Physical, Health Education, Recreation, and Dance*, November, (Supplement 1), 123-138, Available: <http://www.researchgate.net/> [26 May 2014]
16. Mahajan, H., Kazi, Y., Sharma, B. & Velhal, G. (2012). Assessment of KAP, risk factors and associated co-morbidities in hypertensive patients. *Journal of Dental and Medical Sciences*, 1, (2), 6-14, Available: www.iosrjournals.org [26 May 2014].
17. Busari, O.A., Olarewaju, T.O., Desalu, O.O., Opadijo, O.G., Jimoh, A.K., Agboola, S.M., Busari, O.E. & Olalekan, O. (2010). Impact of patients' knowledge, attitude, and practices on hypertension on compliance with antihypertensive drugs in a resource-poor setting. *TAF Preventive Medicine Bulletin*, 9, (2), 87-92, Available: www.korhek.org [1 April 2014].
18. Katibi, I.A., Olarinoye, J.K. & Kuranga, S.A. (2010). Knowledge and practice of hypertensive patients as seen in a tertiary hospital in the middle belt of Nigeria. *Nigerian Journal of Clinical Practice*, 13, (2), 159-162, Available: <http://www.njconline.com> [14 November, 2013].
19. Morgado, M., Rolo, S. & Castelo-Branco, M. (2011). Pharmacist intervention program to enhance hypertension control: a randomised controlled trial. *International Journal of Clinical Pharmacy*, 33, (1), 132-140, Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3042105/> [19 June 2014].
20. National Population Commission (NPC) (2010). 2006 Population and Housing Census: Priority Table Volume III: Population Distribution by Sex, State, LGA & Senatorial District, Abuja: National Population Commission.