

Factors influencing knowledge of the management strategies for hypertension among middle-aged adults in rural areas of Anambra state, Nigeria

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Abstract

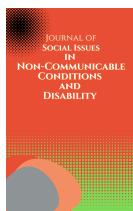
World Health Organization in 2022 records reveal that hypertension is more common in Africa than in other parts of the world, and remains a major common risk factor for cardiovascular diseases, stroke, and death. However, little is known about hypertension management strategies among rural dwellers. The study therefore focused on finding out factors influencing the knowledge of management strategies for hypertension among middle-aged adults in rural areas of Nigeria. Questionnaires were used for data collection from a sample of 1,064 respondents. Data were analyzed using Statistical Package for Social Science. Frequency and percentage distribution tables were used to represent results while chi-square (χ^2) was used to test the hypothesis. Findings show that respondents have low knowledge of hypertension management strategies. Some of the factors influencing the knowledge of hypertension management strategies include level of education ($\chi^2=10.209$), sex ($\chi^2=7.203$), place of residence ($\chi^2=7.240$), and occupation ($\chi^2=12.163$). In conclusion, it was revealed that the respondents have low knowledge of hypertension management strategies. When hypertension is not properly managed, it can lead to loss of vision and other forms of disability. Therefore, the researcher recommended the need for mass awareness creation by social workers on hypertension management strategies as this will help to enlighten the general public.

Key words

Disability, hypertension, management strategies, Nigeria, Social Workers

Key points

1. The study explored the factors influencing knowledge of the management strategies of hypertension among middle-aged adults in rural areas of Anambra state, Nigeria.
2. knowing fully well that uncontrolled high blood pressure can lead to a series of disabilities and associated diseases, support groups can be formed through the aid of social workers where people can collectively share ideas for a healthy lifestyle (Ubuntu theory).
3. the study also suggested some roles social workers will play in creating awareness and engaging in welfare/home visits to enlighten people on some of the hypertension management strategies.
4. findings of the study revealed that level of education, place of residents, sex, and occupation are some of the factors that influence the level of knowledge people have about hypertension management strategies.



Introduction

Hypertension is a silent killer because it often has no warning signs or symptoms, and about 46% of adults with hypertension are unaware that they have the condition. It has always been regarded as a disease of affluence, but this has changed drastically with average blood pressures now higher in Africa than in Europe and the United States of America. The relatively higher prevalence of hypertension in Africa has been linked to population growth and ageing, rising urbanization, mass migration from rural to urban areas, and increased uptake of Western lifestyles including tobacco and alcohol consumption. Hypertension can be seen as one of the cardiovascular disease risk factors for the development of functional disability. It damages the kidney, heart, and eye resulting in loss of vision. A variety of major eye diseases have been linked to hypertension. It affects the structure and function of the eye. Despite all the side effects of uncontrolled hypertension, evidence has shown that people have low knowledge of hypertension, especially in rural areas, and there are some factors associated with the level of knowledge people have about management strategies for hypertension. As an educator, social workers can help in educating people on some hypertension management strategies, and by so doing they are changing and protecting people's lives.

Background

Hypertension is one health challenge that results from aging, and this phenomenon has been identified as one of the major modifiable risk factors for mortality and disability (Busingye et al., 2019; World Health Organisation (WHO, 2023). The burden of hypertension is excessively present in low- and middle-income countries due to increased risk factors in these populations (Mohammed Nawi et al., 2021). Globally, hypertension is a serious problem that causes an increased risk of premature death, cardiovascular disease (CVD), cerebrovascular disease, myocardial infarction, stroke, heart failure, heart attack, dementia, kidney failure/damage, chronic kidney disease, cognitive dysfunction, visual impairment in the worst cases and many other health problems (WHO, 2023; Zhang et al., 2021).

During the world hypertension day in 2022, it was reported that in the last thirty years, the number of adults aged 30-79 years with hypertension has nearly doubled to 1.28 billion worldwide (Okebe, 2022). Health professionals revealed that up to 76.2 million Nigerians have hypertension, and one in three adults has hypertension (Chukwuma & Odun, 2021). This means that almost half of the country is at risk of stroke and heart disease. Furthermore, Isara and Okundia (2015) documented reports of the prevalence of hypertension in different regions of Nigeria. Thus, in a study by Odili et al. (2020), the Southeast region has the highest rate of hypertension (52.8%) and the lowest is 20.9% in the North Central region of Nigeria. For example, the prevalence of hypertension in Anambra State, one of the five states that made up the Southeast region in 2016, was 42.5%, while the prevalence in Oyo and Bornu States was 34.8% and 24.2% respectively (Adeloye et al., 2021). The prevalence of hypertension was 37.5% in rural Nigerians, compared with 39.2% in urban populations (Ayogu et al., 2021; Odili et al., 2020). However, only 7.2% of people in rural areas know about hypertension and its management (Ayogu et al., 2021). Globally, hypertension is responsible for approximately 12.8% (7.5 million) deaths each year. It is responsible for at least 29% of all

deaths in Nigeria and accounts for up to 60% of patients admitted to the medical departments of most tertiary hospitals in Nigeria (Ajisegiri et al., 2022; Okebe, 2022). Wu et al. (2021) noted that there is a close link between hypertension and disability.

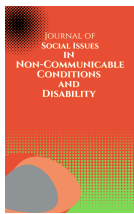
With the growth of the adult population and the changing lifestyles of Nigerians, the burden of hypertension is likely to continue to increase over time. Therefore, periodic screening of symptomatic individuals as part of early diagnosis, treatment, and control of hypertension is essential (Longo et al., 2012). Knowledge of hypertension management strategies is key to limiting hypertensive mortality, as better knowledge of hypertension is often associated with better adherence to antihypertensive medication and pressure (Busingye et al., 2019).

There are various types of management strategies employed in hypertension-related cases. These strategies help in maintaining a healthy lifestyle. In preventing hypertension, there must be the management of modifiable risk factors through the adoption of a healthy lifestyle, such as weight control, increasing physical activity, going to community viewing centre, quitting smoking, consuming less alcohol, or managing emotional stress (Onalu & Okoye, 2024; WHO, 2017). Physical activity directly reduces blood pressure; it controls body weight and helps manage emotional stress, which is crucial in hypertension care (WHO, 2017). Again, diet management through salt reduction and healthy eating is crucial in controlling hypertension (Mayor Clinic Staff, 2023; Onalu & Okoye, 2024).

Bearing in mind factors associated with knowledge of hypertension management strategies is an essential starting point to preventing the high prevalence of hypertension and rates of disability due to uncontrolled hypertension. Several studies have revealed that there is a low level of knowledge on the management strategies for hypertension (Akoko et al., 2017; Motlagh et al., 2015), however, there is little information available on factors influencing the level of knowledge people have about hypertension management strategies. Noticing the importance of the topic, this study aimed to determine the factors associated with knowledge of hypertension management strategies. The study is guided by the following research questions; a) What is the level of knowledge of the management strategies of hypertension? B) What are the factors influencing the level of knowledge people have about hypertension management strategies? It is believed that the findings of this study will provide information to the international and local campaigns that are championing the eradication of hypertension and disability as a result of uncontrolled blood pressure in Nigeria.

Methodology

The study was conducted between January and March 2021, and the study area was Anambra State which is one of the 36 states in Nigeria. The state was created on 27th August 1991 out of the old Anambra state and is located in the Southeast geopolitical zone of Nigeria. The state has a population of 4,177,828 comprising 2,117,984 males and 2,059,844 females (National Population Commission (NPC), 2010). With an annual growth rate of 2.8%, the population of the state as of 2021 when the study was carried out stood at 6,358,311. The target population for the study was middle-aged adults, aged 45 to 64 residents in rural areas of Anambra state.



Firstly, out of the six geopolitical zones in Nigeria, the South-East region was purposively selected because the region according to the study conducted by Adeloje et al., (2021) has the highest prevalence of hypertension in Nigeria. From the Southeastern region, the researchers went further to purposively select Anambra state. The prevalence rate of hypertension in Anambra state as of 2016 stood at 42.5% (Adeloje et al., 2021). Also, Ezekwesili et al. (2016) stated that Anambra state has a high prevalence of hypertension, and the level of knowledge or awareness, detection, and treatment of the disease is unacceptably low. To this end, the prevalence rate of hypertension and low knowledge of management strategies for hypertension justifies the focus of the study on the Anambra state. Secondly, the researcher originates from the state, so, she is conversant with the terrain of the state and is also fluent in the Igbo variant of the Anambra dialect.

Anambra State has 21 Local Government Areas (LGAs) in three senatorial districts (Anambra Central, Anambra North, and Anambra South). One rural LGA was purposively selected from each senatorial zone, and from Anambra Central, Awka-North LGA was selected, Anambra-West LGA, and Orumba-South were selected from Anambra North and Anambra South senatorial zones respectively. The choice of the three LGAs was that aside from being the three most interior LGAs in the selected zones, no study has been conducted in the three LGAs concerning hypertension and factors influencing knowledge of its management strategies. Again, the choice of rural LGA and rural population was because most often there is no health centre in these rural areas, and the rural population does not have adequate information on health services. Furthermore, two rural communities were further selected from each of the selected LGAs. The communities were Mmiata-Anam, and Nzam from Anambra-West LGA, Mgbakwu and Urum from Awka-North LGA, while Ogbunka and Agbudu were selected from Orumba-South LGA. In the whole, six communities were studied.

The questionnaire was the instrument for data collection. The researcher administered the questionnaire with the help of four research assistants. The researcher recruited and trained four research assistants on the study's aims and procedures for two days. They were also subjected to a test of familiarity with the questionnaire items and proper completion. The test was done by piloting in a nearby locale that was not part of the study areas. They were indigenes of at least one of the three selected LGAs. The questionnaire was self-administered; the researcher and research assistants assisted those who could not fill the questionnaire out on their own. The questionnaire was administered to 1,047 middle-aged adults from the selected communities. The study respondents provided informed consent and the study was conducted under the Department of Psychology, University of Nigeria Nsukka, Nigeria, Research Ethics Committee, approval number (I D.PSY.UNN/REC/2020-1-008).

The researcher employed quantitative methods of data analysis. The data from the questionnaire were computer-processed using Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics such as frequency tables, chart, and percentages, were used to present results. The chi-square (χ^2) test was employed to establish an association between knowledge of management strategies of hypertension and the focused elements of the

datasets, while multivariate logistic regression analysis was carried out to predict the relationship between the focused elements and knowledge of the management strategies of hypertension. the dependent variable in the regression analysis was the knowledge of hypertension management strategies. The socio-demographic characteristics constituted the independent variables. The level of significance for all the analyses were set at a minimum of $p \leq 0.05$.

Results

Level of knowledge about hypertension management strategies

Figure 1 depicts the findings regarding respondents' knowledge of hypertension management strategies. According to the figure, respondents with more knowledge of hypertension management strategies were 46.9%, while those with less knowledge were 53.1%. As shown in the figure, more than half of the respondents knew little about hypertension management strategies.

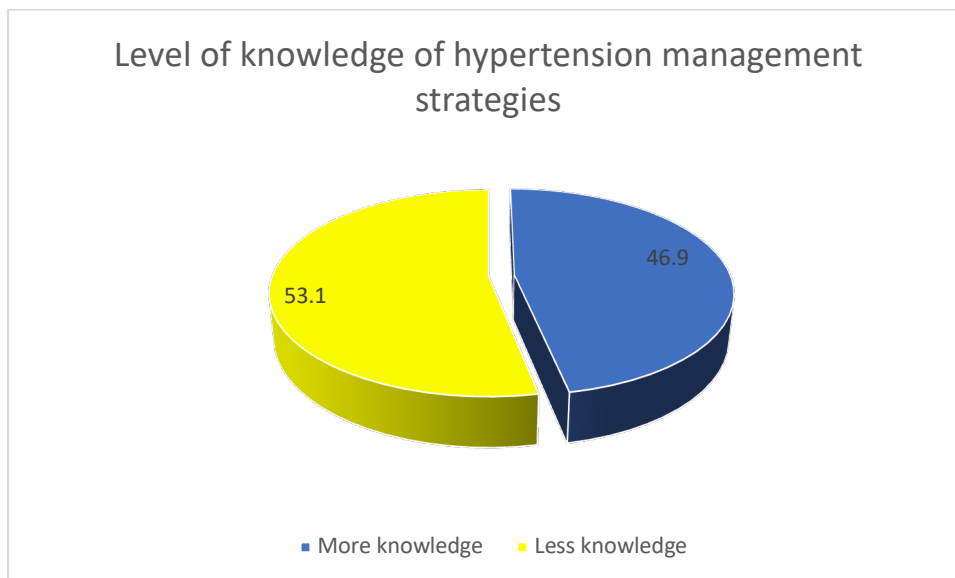


Fig 1: *Percentage distribution of respondents by their level of knowledge of management strategies of hypertension*

Socio-demographic characteristics of respondents and factors influencing knowledge of the management strategies for hypertension.

As illustrated in Table 1, the respondents were evenly distributed across the three selected LGAs. More of the respondents (52.4%) were males. In all, 46.9% of the respondents have knowledge of the management strategies of hypertension with respondents from Anambra-West having the highest level of knowledge (65.4%). More females than males were also more knowledgeable of the management strategies of hypertension just as respondents who were artisans recorded the highest level of knowledge (70.3%). The level of knowledge was lowest

among respondents with no formal education and those who were not educated beyond primary school. The result of the χ^2 test shows that the following socio-demographic characteristics of the respondents; place of residence, sex, level of education, and occupation were significantly associated with knowledge of the management strategies of hypertension among the study sample ($p < .001$). marital status was not significant.

Table 1: Characteristics, knowledge of management strategies and bivariate association of respondents

Variable	Respondents (%)	Knowledge hypertension management strategies	of <i>F</i> -value
LGA			7.240**
Awka-North	33.1	51.0	
Anambra-West	33.4	65.4	
Orumba-North	33.5	50.2	
Sex			7.203**
Male	52.4	55.1	
Female	47.6	63.3	
Education			10.209**
No formal education	13.1	55.1	
Primary education	16.9	54.4	
Secondary education	5.3	71.2	
Diploma/NCE	17.7	61.0	
Tertiary education	47.1	78.4	
Marital status			.187
Single	2.6	53.1	
Married	83.3	59.0	
Separated	4.6	63.2	
Divorced	2.6	57.3	
Widowed	6.9	59.4	
Occupation			12.163**
Civil servant	34.4	61.1	
Trader	29.9	49.0	
Artisan	4.4	70.3	
Farmer	22.7	74.0	
Others	8.6	46.2	

**Significant at $p < .001$

Dimension of management strategies of hypertension and multivariate analysis

The bivariate analysis of the responses shows that the focus elements of LGA of residence, sex, education, and occupation were statistically significant in their association with the knowledge of management strategies for hypertension. The results of regression analysis in the focused elements as the determinants of the knowledge of the management strategies however identify aspects of the target population and other elements that were statistically predictors of

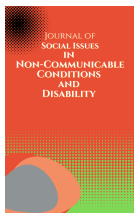
knowledge of management strategies of hypertension. The results further reveal that not all the elements with significant association in the multivariate analysis were significant predictors. The result shows that being residents of Orumba-North, having primary education and artisan lowers the likelihood of having knowledge of the management strategies of hypertension. Residents of Anambra-West were two times more likely to have knowledge of the management strategies of hypertension while the odds were between almost one and three times higher for respondents with secondary education, diploma/NCE, and tertiary education. Again, the result shows that being a trader, farmer and other occupation like sport increases the likelihood of having knowledge of the management strategies of hypertension.

Table 2: *Coefficients of model predicting knowledge of management strategies of hypertension*

		B	Exp (B)
Focused elements			
LGA	Awka-North (reference)		
	Anambra-West	.699	2.012**
	Orumba-North	.147	.863
Sex	Male (reference)		
	Female	-.360	.698*
Education	No formal education (reference)		
	Primary education	.212	1.240
	Secondary education	.865	2.375**
	Diploma/NCE	.454	1.575*
	Tertiary education	1.074	2.928**
Marital status	Single (reference)		
	Married	.490	1.643*
	Separated	.590	1.584*
	Divorced	.576	1.796*
	Widowed	.083	1.068
Occupation	Farmers (reference)		
	Civil servants	.952	2.590**
	Trader	.475	1.607*
	Artisan	.011	1.001
	Others	.886	2.426**
Constant		-.745	470
Model χ^2 ()	1320.370		
Cox & Snell R Square	.088		
Nagelkerke R Square	.118		

Note: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Discussion

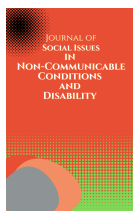


The result of the study revealed that not up to half of the study respondents (46.9%) were knowledgeable about hypertension management strategies. The finding was in agreement with the findings of (Akoko et al., 2017; Motlagh et al., 2015). The finding contradicts the findings of Daniel and Rathore (2017) in a study they conducted in Bishoftu and that of Barreto et al. (2014) in a study they conducted in Brazil which revealed that there is high knowledge of the management strategies of hypertension. The difference may be because my study was conducted in a rural area which because of proximity, most often denies residents access to healthcare and other relevant information.

Findings from this study revealed that there is a statistically significant relationship between level of education and knowledge of hypertension management strategies at $p=0.000$. This is similar to the findings of Chimberengwa et al. (2016); Jankowska-Polanska et al. (2016); and Oladeji et al. (2020). In addition, the study revealed in Table 2 that education level is a predictor of knowledge of hypertension management strategies. The odds of being knowledgeable among respondents who had secondary education, diploma/NCE, and tertiary education were 2.375, 1.575, and 2.928 times better, respectively, compared to those with no formal education. It means that the higher the level of education, the greater the percentage of respondents who are knowledgeable about hypertension management strategies. According to Oladeji et al. (2020), the more education people receive, the more likely they are to be aware of hypertension management strategies. Persons who are educated could access information on hypertension management strategies through content materials like newspapers, manuals, leaflets, and so on, which might make them knowledgeable about hypertension management strategies. Also, educated persons can easily interact with healthcare providers when they have worries. The findings of this study are in agreement with the findings of the study conducted by Motlagh et al. (2015) in Iran in which the proportion of the management of hypertension was higher among persons with higher education compared to those with lower education.

In the current study, sex has a significant association with the level of knowledge of hypertension management strategies ($p=0.007$), with females having more knowledge. In addition, sex is statistically significant in predicting knowledge of hypertension management strategies in Table 2. The current study's findings are consistent with those of Mekonnen et al. (2019), who discovered a statistically significant relationship between sex and knowledge of hypertension management strategies, with female respondents (AOR= 3.79, 95% CI (1.55, 9.28) being more knowledgeable than males. This is supported by the findings of Alsuwaida and Alghonaim's (2011) work in Saudi Arabia. Even though the population of male respondents is higher in the current study when compared to their female counterparts, females have more knowledge of hypertension management strategies. In the cross-tabulation of educational status and sex of respondents, females had higher educational status compared to their male counterparts. Hence, it is believed that persons with higher educational status will have more understanding and also access to information. This may explain the significant association with females having more knowledge of hypertension management strategies than males.

Furthermore, there is a significant association between occupation and level of knowledge of hypertension management strategies at $p=0.000$. In addition, compared to farming, government



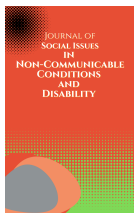
employment (civil servant) increased the chances of being knowledgeable of hypertension management strategies almost three-fold. This was in agreement with the findings of Mekonnen et al. (2019) in Northwest Ethiopia, and that of Anowie and Darkwa (2016) in Ghana, where it was revealed that respondents who were employed by the government scored better than those who were not in the knowledge of hypertension management strategies.

Practice consideration for social work practice and education in Nigeria

The findings revealed that the respondents have low knowledge of the management strategies of hypertension. It is important to note that when people have low/poor knowledge of hypertension management strategies, they may not be able to control their blood pressure. Non-management of hypertension can lead to dementia (Elias & Elias, 2007), and loss of vision which according to Ashenef et al (2023) is a common problem among hypertensive patients. Non-management of hypertension can lead to hypertension-associated diseases like heart failure, stroke, peripheral vascular diseases, angina pectoris, and myocardial infarction are risk factors for disability (Elias & Elias, 2007). Social work practice cuts across all spheres of human lives, hence, whatever affects the healthy functioning of humans' lives is of paramount to social workers. There this is a wake-up call for social workers to enlighten middle-aged adults on management strategies for hypertension. Social workers can engage in what Onalu et al. (2024); and Onalu and Okoye (2024) called welfare//home visit. During this visit, social workers should encourage these middle-aged adults including the older adults to have their blood pressure checked regularly and can go as far as accompanying these persons to a nearby primary healthcare center where they not only check their blood pressure but also get information on hypertension management strategies. By doing so, social workers change, protect lives, and also prevent people from developing some form of disabilities as a result of non-management of their blood pressure. Moreover, during welfare/home visits, social workers in community agencies can instruct and monitor individuals in screening their blood pressure at the agency (Francoeur, 2010).

Also, the fact that educational status, place of residence, sex, and occupation influence the level of knowledge the respondents have about management strategies for hypertension calls for urgent attention of the social workers. There is a need for social workers to sensitize the general public particularly those with lower levels of education, males, artisans, and persons from rural areas on the management strategies for hypertension. Agha et al. (2022) and Onalu et al. (2021a & b) suggested that social workers can facilitate support groups for middle-aged adults which can help middle-aged adults to collectively share ideas on hypertension management strategies. Social workers or any other health workers can lead the support groups' discussion, and provide information on hypertension management, and dietary and lifestyle modification to middle-aged adults to aid them improve their healthcare literacy which will enable them to enlighten other members of their community on hypertension management strategies (Onalu et al., 2024). When people have knowledge of the management strategies of information and put it into practice, it will help to curb the rate of disability as a result of non-management of hypertension.

Conclusion



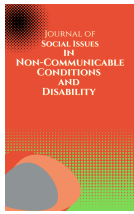
In conclusion, the study explores factors influencing knowledge of the management strategies of hypertension in rural areas of Anambra state, Nigeria. Findings from the study revealed a generally low knowledge of hypertension management strategies, and some of the factors influencing the level of knowledge are place of residence, sex, level of education, and occupation. Nigerian social workers should engage in mass sensitization of the general public most especially people from rural areas, persons with lower educational status, artisans, and males on the management strategies for hypertension. Social workers and other healthcare workers can achieve this by encouraging people to go for regular BP checkups in a nearby health centre where they will receive health talks on some of the hypertension management practices. Subsequent studies should consider practice attitudes toward hypertension management strategies. Findings like these will provide insights into the concerns that will amplify calls for workshops and seminars by social workers to enlighten people about the need to have a positive attitude towards putting into practice the management strategies for hypertension in order to avoid hypertension-associated diseases and disability.

References

- Adeloye, D., Owolabi, E. O., Ojji, D. B., Auta, A., Dewan, M. T., Olanrewaju, T. O., Ogah, O. S., Omoyele, C., Ezeigwe, N., Mpazanje, R. G., Gadanya, M. A., Agogo, E., Alemu, W., Adebisi, A. O., & Harhay, M. O. (2021). Prevalence, awareness, treatment, and control of hypertension in Nigeria in 1995 and 2020: A systematic analysis of current evidence. *Journal of Clinical Hypertension (Greenwich, Conn.)*, 23(5), 963–977. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8678849/> <https://doi.org/10.1111/jch.14220>
- Agha, A.A., Onalu, C., & Chidebe, R. (2022). Bridging the gap: Investigating the role of social workers in supporting metastatic breast cancer patients in Nigeria. *Social Work in Public Health*, 37(3), 244–257. <https://pubmed.ncbi.nlm.nih.gov/34816769/>
- Ajisehiri, W. S., Abimbola, S., Tesema, A. G., Odusanya, O., Peiris, D., & Joshi, R. (2022). The organisation of primary health care service delivery for non-communicable diseases in Nigeria: A case-study analysis. *PLOS Global Public Health*, 2(7), e0000566. <https://doi.org/10.1371/journal.pgph.0000566>
- Akoko, B.M., Fon, P.N., Ngu, R.C., Ngu, K.B. (2017). Knowledge of hypertension and compliance with therapy among hypertensive patients in the Bamenda Health District of Cameroon: a cross-sectional study. *Cardiol Ther*, 6(1), 3–67. <https://pubmed.ncbi.nlm.nih.gov/28035630>
- Animasahun, V. J., & Chapman, H. J. (2017). Psychosocial health challenges of the elderly in Nigeria: A narrative review. *African Health Sciences*, 17(2), 575–583. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5642086/> <https://doi.org/10.4314/ahs.v17i2.35>
- Anowie F, Darkwa S. (2016). The knowledge, attitudes and lifestyle practices of hypertensive patients in the cape coast Metropolis-Ghana. *Journal of Scientific Research and Reports*, 8(7), 1–15. <https://org.doi/10.9734/JSRR/2015/19891>
- Ashenef, B., Diress, M., Yeshaw, Y., Dagne, B., Gela, Y.Y., Akalu, Y., Abdurahman, A., Abebaw, K. (2023). Visual impairment and its associated factors among hypertensive patients in Amhara Region Referral Hospitals, Ethiopia. *Clinical Ophthalmology*, 17, 3149–3161. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10597370/>
- Ayogu, R. N. B., Ezech, M. G., & Okafor, A. M. (2021). Prevalence and predictors of different patterns of hypertension among adults aged 20–60 years in rural communities of Southeast Nigeria: A cross-sectional study. *Archives of Public Health = Archives Belges de Sante Publique*, 79(1), 210. <https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-021-00724-y> <https://doi.org/10.1186/s13690-021-00724-y>
- Barreto, M.D.S., Reiners, A.A.O., & Marcon, S.S. (2014). Knowledge about hypertension and factors associated with the non-adherence to drug therapy. *Rev Lat Am Enfermagem*, 22(3), 491–498. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4292628/>.3447.2442
- Busingye, D., Arabshahi, S., Evans, R. G., Riddell, M. A., Srikanth, V. K., Kartik, K., Kalyanram, K., Zhu, X., Suresh, O., Howard, G., & Thrift, A. G. (2019). Knowledge

- of risk factors for hypertension in a rural Indian population. *Heart Asia*, 11(1), e011136. <https://doi.org/10.1136/heartasia-2018-011136>
- Chimberengwa, P. T., Naidoo, M., Naidoo, M., & Cooperative Inquiry Group (2019). Knowledge, attitudes and practices related to hypertension among residents of a disadvantaged rural community in southern Zimbabwe. *PLoS One* 14(6), e0215500. <https://pubmed.ncbi.nlm.nih.gov/31237883/>
- Chukwuma, M., & Odun, E. (2021). May 17). 76.2m Nigerians are hypertensive but only 23 million on treatment. *Guardian*. <https://guardian.ng/features/76-2m-nigerians-arehypertensive-but-only-23-million-on-treatment/>
- Daniel, D., & Rathore, Kamal S. (2017). Assessment of knowledge, attitude and practice of hypertensive patients towards the non- medical management of hypertension in Bishoftu General Hospital, 2016. *The Pharmaceutical and Chemical Journal*, 4(1), 48–59. <https://tpcj.org/download/vol-4-iss-1-2017/TPCJ2017-04-01-48-59.pdf>
- Elias, M.F., & Elias P.K. (2007). Blood pressure and disability. *Hypertension*, 50(6). <https://www.ahajournals.org/doi/10.1161/HYPERTENSIONAHA.107.100883>
- Ezekwesili, C. N., Ononamadu, C. J., Onyekwu, O. F., & Mefoh, N. C. (2016). Epidemiological survey of hypertension in Anambra state, Nigeria. *Nigerian Journal of Clinical Practice*, 19(5), 659–667. <https://pubmed.ncbi.nlm.nih.gov/27538557/> <https://doi.org/10.4103/1119-3077.188710>
- Motlagh, S.F.Z., Chaman, R., Ghafari, S.R., Parisay, Z., Golabi, M.R., slami, A.A., & Babouei, A. (2015). Knowledge, treatment, control, and risk factors for hypertension among adults in Southern Iran. *International Journal of Hypertension*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4689970/>
- Isara, A. R., & Okundia, P. O. (2015). The burden of hypertension and diabetes mellitus in rural communities in southern Nigeria. *The Pan African Medical Journal*, 20(3), 103. <http://www.panafrican-med-journal.com/content/article/20/103> <https://doi.org/10.11604/pamj.2015.20.103.5619>
- Jankowska-Polanska, B., Uchmanowicz, I., Dudek, K., Mazur, G. (2016). Relationship between patients' knowledge and medication adherence among patients with hypertension. *Patient Prefer Adherence* 10, 2437-2447. <https://pubmed.ncbi.nlm.nih.gov/27994443/>
- Longo, D. L., Kasper, D. L., Jameson, J. L., Fauci, A. S., Hauser, S. L., Loscalzo, J., editors (2012). *Harrison's Principles of Internal Medicine*. 18th ed. McGraw-Hill. 7.
- Mayor Clinic Staff (nd). *Alcohol use: Weighing risks and Benefits*. <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/alcohol/art-2004451>
- Mekonnen, C.K., Mekonnen, B.Y. & Mekonnen, H.S. (2015). Knowledge and associated factors of blood pressure control among hypertensive patients attending chronic illness follow-up clinic at University of Gondar, Comprehensive Specialized Hospital, Northwest, Ethiopia. *Vascular Health and Risk Management*, 15, 551-558. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6916695/>
- Mohammed Nawi, A., Mohammad, Z., Jetly, K., Abd Razak, M. A., Ramli, N. S., Wan Ibadullah, W. A. H., & Ahmad, N. (2021). The prevalence and risk factors of hypertension among the urban population in Southeast Asian Countries: A systematic

- review and meta-analysis. *International Journal of Hypertension*, 2021, 6657003. pmid:33628485 <https://doi.org/10.1155/2021/6657003>
- Motlagh, S. F. Z., Chaman, R., Ghafari, S.R., Parisay, Z., Golabi, M.R., Eslami, A.A., & Babouei, A. (2015) Knowledge, treatment, control, and risk factors for hypertension among adults in southern Iran. *International Journal of Hypertension*, <https://www.hindawi.com/journals/ijhy/2015/897070/>
- Odili, A. N., Chori, B. S., Danladi, B., Nwakile, P. C., Okoye, I. C., Abdullahi, U., Nwegbu, M. N., Zawaya, K., Essien, I., Sada, K., Ogedengbe, J. O., Aje, A., & Isiguzo, G. C. (2020). Prevalence, awareness, treatment and control of hypertension in Nigeria: Data from a nationwide survey 2017. *Global Heart*, 15(1), 47. [https://doi.org/10.5334/gh.848](https://www.researchgate.net/publication/342863225_Prevalence_Awareness_Treatment_and_Control_of_Hypertension_in_Nigeria_Data_from_a_Nationwide_Survey_2017)
- Okebe, J. (2022, March 17). On this world hypertension day 2022: Emphasising the Importance of Accurate Measurement and Increased Awareness. *ISGlobal*. <https://www.isglobal.org/en/healthisglobal/-/custom-blog-portlet/on-this-world-hypertension-day-2022-emphasising-the-importance-of-accurate-measurement-and-increased-awareness/5620053/14101>
- Oladeji, O. B., Olagunji, O., Meludu, N. K. (2020). Awareness, knowledge and utilization of hypertension management techniques among rural dwellers in Ijebu-North East Local Government Area of Ogun State, Nigeria. *Journal of hypertension and management*. <https://www.vanguardngr.com/2017/01/nigeria-tops-hypertension-rates-africa-study/>
- Onalu, C., Okah, P., & Okoye, U. (2024). A focused group perspective of risk factors for hypertension among middle-aged adults in rural areas of Anambra state, Nigeria. *Journal of Evidence-Based Social Work*, 21(1), 1-17. <https://doi.org/10.1080/26408066.2023.2252241>
- Onalu, C., & Okoye, U. (2024). Qualitative study on knowledge of non-pharmacological interventions as management strategies for hypertension among middle-aged adults in rural areas of Anambra state. *Journal of Social Service Research*, 50(2), 215-227. <https://www.tandfonline.com/doi/abs/10.1080/01488376.2023.2281362>
- Onalu, C., Agwu, P., Gobo, B., & Okoye, U. (2021a). Mortality experiences for women in riverine areas of the Niger delta and utilization of maternal health services. *Health & Social Work*, 46(1), 59–67. [https://doi.org/10.1093/hsw/hlaa032](https://academic.oup.com/hsw/article-abstract/46/1/59/6151740)
- Onalu, C., Agwu, P., Okoye, U., & Agha, A. (2021b). Mother-to-child transmission of HIV and utilization of preventive services in Anambra south senatorial zone, Nigeria: Practice considerations for social workers. *International Social Work*, 64(6), 857–871. [https://doi.org/10.1177/0020872820901748](https://journals.sagepub.com/doi/abs/10.1177/0020872820901748)
- WHO (2023). Global report on hypertension: The race against a silent killer. <https://reliefweb.int/report/world/global-report-hypertension-race-against-silent-killer>



- WHO. (2017). *Diagnosis and management for patients with hypertension: A non-communicable disease education manual for primary health care professionals and patients: WHO recommendations and policies*. WHO.
- Zhang, Y., Yang, H., Ren, M., Wang, R., Zhao, F., Liu, T., Zhang, Y., Guo, Z., & Cong, H. (2021). Distribution of risk factors of hypertension patients in different age groups in Tianjin. *BMC Public Health*, 21(1), 247. [https:// doi.org/10.1186/s12889-021-10250-9](https://doi.org/10.1186/s12889-021-10250-9)