



Assessment of Primary School Teachers Knowledge of Risk Factors for Hypertension in Gwoza Local Government Area, Borno State, Nigeria

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ABSTRACT

This study assessed the knowledge of risk factors for Hypertension among primary school teachers in Gwoza Local Government Area Borno, State. The objective of the study was to determine primary school teachers knowledge of risk factors for hypertension in Gwoza Local Government Area Borno. The study employed survey design. A Sample size of 219 teachers from the target population of 953 primary school teachers were respondents of this study, proportionate sampling was used to select teacher from selected schools. Data for this study was obtained using self-developed questionnaire consisting of 35-item based on 5-point Likert scale. Data was analysed using descriptive statistics of frequency count and percentage, independent sample t-test was used to test hypothesis. 193 respondents, representing 96.5%, were not knowledgeable about risk factors for hypertension, whereas 7 respondents, representing 3.5%, were knowledgeable. An independent sample t-test on knowledge of risk factors for hypertension revealed no significant difference ($t(198) = .724, p = .470$). The mean scores were male ($M = 1.7624, SD = .27110$) and female ($M = 1.7333, SD = .28060$). The study found a small mean difference of 0.0291, with a 95% confidence interval ranging from 0.0509 to 0.1090. As a result, the study accepts the null hypothesis. The study concluded that primary school teachers in Gwoza Local Government area, Borno State, lack knowledge on risk for hypertension. The study recommended that the Borno State Universal Basic Education Board (BOSUBEB), in collaboration with the ministries of education and the Ministry of Health should organize teachers specific health promotion programme to raise awareness about hypertension and make efforts to improve welfare packages, monthly Income and teachers' wellbeing.

Keywords: Knowledge, Risk factors, hypertension, assessment Teachers

INTRODUCTION

Hypertension also referred to as high, rising, or elevated blood pressure, is a chronic non-communicable disease (NCD). Hypertension also known as silent killer is a major public health problem and the most common cardiovascular disorder, affecting approximately one billion people globally. It has been the primary cause of the world's burden of sickness and mortality since the early 2000s. However, over time, hypertension can raise the risk of conditions including chronic renal disease, heart failure, stroke, eyesight loss. Authors and medical professionals have linked the high frequency of hypertension to societal stress, ageing populations, food habits, and population increase. Many people with hypertension remain unidentified, untreated, or receive inadequate care, contributing to the increasing burden of cardiovascular disease. Widely recognized long-term effects of hypertension include disability and early mortality, along with an increased risk of cardiovascular events such as heart disease, stroke, and kidney failure (WHO, 2013).



People often refer to hypertension as a silent killer due to its lack of early warning signs or symptoms, leading many individuals to remain unaware of their condition for that reason they are at high risk of hypertension (Farag, 2014). If there is awareness for those at risk for hypertension and thus lead to preventative action or early management, which may ultimately curb the societal and economic burden of the disease (Ataklte, 2015). Wijayathunge and Hettiaratchi (2017) reported that the main cause of hypertension is risk factors found in the teaching profession which school instructors and educators are especially vulnerable to the condition because of these risks and therefore because of lack of knowledge of the risk factors there were prevalence of hypertension among educators in a specific district in Sri Lanka.

Cheung, (2017) suggested that developing proper information about hypertension can support effective hypertension control practices. Poor hypertension self-care behaviors are a direct result of low hypertension awareness. In addition to increasing the risk of hypertension, genetic and lifestyle factors such as excessive fat and salt intake, physical inactivity, harmful alcohol consumption, and poor stress management may also play a role in the actions and behaviors which may elevate blood pressure and negatively impact on health. Growing evidence shows that people are at risk of hypertension because of these unhealthy lifestyle factors (Kar, 2015).

Girish and Sumanth (2017) conducted a study to investigate the prevalence of hypertension among primary school teachers in urban Tumkur, as well as identify the risk factors associated with this condition. They measured the blood pressure of 70 teachers in the five schools, 19(27.14%) of whom were men and 51(72.86%) of whom were women. There were 20 teachers (28.57%) with a hypertension diagnosis. According to this research, 65% of hypertensive teachers had a positive family history of the disease. 10% of instructors with hypertension also smoke, and 15% of teachers do not use alcohol. 25% of hypertension patients slept for fewer than six hours every day. Seventy-five percent of hypertensive people do not meditate, and 65 percent of them do not do yoga. 28.57% of teachers reported having hypertension

The risk factors for adult-onset hypertension in Mapanget Village, north Minahasa. Early detection of adult hypertension, as well as knowledge of the condition's risk factors is critical and the study found a relationship between hypertension and alcohol use, physical inactivity, smoking, obesity, and family history (Debora Tolimba, Palunggi, Siregar, & Harefa's (2023)

Nwoga, (2023) assessed the risk factors for hypertension among the staff of a tertiary institution in Nigeria. The study included every willing employee at Enugu State University College of Medicine, College of Basic and Clinical Medical Sciences. Their research revealed that the majority of the workers (62.1%) were unaware of their blood pressure measurements. 17% of the workers smoke, 29% drink alcohol, and seventeen percent season their homemade food with salt. Furthermore, around 29.3% of families have a history of hypertension

Pedwindé, Salam, Simon, Bernard, Denis, Brice, Yacouba, and Hyacinthe (2022) identified risk factors associated with hypertension in the Koumbri municipality population. They came to the conclusion that lack of physical activity, advanced age, abdominal obesity, intra-family conflicts, and a family history of hypertension were the key risk factors. To lower the prevalence of hypertension in Burkina Faso, they advised weight control,



frequent exercise, intrafamily stress management, and the employment of family and marriage counsellors in the handling of intra-family issues.

Bosu (2016) conducted an analysis of the factors influencing hypertension and the mean blood pressure in West African labourers. Similar factors that influenced both mean blood pressure and hypertension were male sex, age group, greater socioeconomic position, obesity, alcohol intake, plasma glucose, and salt excretion. The correlation between hypertension, educational attainment, and ethnicity was not constant. Employees who were more likely to have a cardiovascular event did not think of themselves as such. Given the current norm of prehypertensive blood pressure, low risk perception, and clustering of risk factors and there was need of interventions such as healthy eating, increased physical activity, and a positive work environment. There is an immediate need for effective approaches to improve the cardiovascular health of sedentary informal sector workers in Africa.

Ayanniyi, O., Akinremi, A., Odunnaiya, N., & Adenaike, I. (2016) assert that repetitive stress associated with jobs is a common occurrence for teachers, and this stress has been associated with chronic diseases in professionals. Due to exposure to hazardous lifestyles, urban residents may be more susceptible to cardiovascular disease, yet little is known about their cardiovascular disease profile. Study participants exhibited a high prevalence of low physical activity (41%). Alcohol consumption was high (17%), but tobacco use was low (2.1%) among research participants. Comparatively speaking, more women (45.2%) than men (34.3%) reported low physical activity. In comparison to their male counterparts, a notably higher proportion of female educators exhibited abdominal obesity. Given the significant prevalence of modifiable cardiovascular risk factors in the study population, primary prevention strategies may be effective in lowering the risk of cardiovascular disease.

Meher, Pradhan, and Pradhan (2023) conducted a systematic literature review of papers pertaining to risk factors associated with young adult hypertension. Adults who are fat, smoke, chew tobacco, drink alcohol, lead sedentary lives, eat excessive amounts of salt, and lead unhealthy lifestyles are more likely to acquire hypertension.

Bakker, Sui, Brellenthin, and Lee. (2018) reviewed the most current research on the benefits of fitness, exercise, and physical activity for preventing hypertension. There is substantial evidence to suggest that engaging in moderate-to-vigorous physical activity, especially aerobic exercise, and increasing cardio respiratory fitness (CRF) reduces the risk of hypertension and lowers blood pressure (BP).

Abdullahi and Amzat (2011) examined awareness about the risk factors and complications associated with hypertension at the University of Ibadan, Nigeria. They conclude that workplace education initiatives and on-the-job screenings are essential means of raising awareness of hypertension among employees.

Occupational demands placed on teachers and an educator seems to mount as they are required to fulfill multiple roles that draw upon their capacity for high emotional labour. Insurgencies have plagued Borno State for a decade, causing primary school teachers to live in constant fear due to their vulnerability to attacks by Boko Haram, as they are commonly known. Teachers in Gwoza Local Education Authority, like their counterparts elsewhere in the State, might find themselves living between two villages, which mean that they must move



between these villages on every work day to their place of assignment. Primary school teachers in the Gwoza Local Education Authority seem to be more than ever, responsible for not only their pupils' academic progress but also their personal progress. Parents' expectations regarding their pupils' performance confront primary school teachers working for the Gwoza Local Education Authority, and they often bear the blame for any shortcomings of the pupils.

Primary school teachers must develop and maintain an effective working relationship with their colleagues and supervisors for the purposes of social support and administrative assistance. The teaching profession has its potential stressors that can have varying negative effects on the teacher's work performance and personal well-being. In Gwoza Local Education Authority, the most common occupational stressors include fear of attacks from Boko Haram, insufficient administrative support, a lack of peer support, role conflict, role ambiguity, and expectations regarding their emotional commitment to their work. Furthermore, the researcher observed that most of the primary school teachers in Borno State are low-income earners who are poorly remunerated, unmotivated, and have a tendency to pay little or no attention to health issues, which may be due to factors such as family pressure, family crises, poor social amenities such as housing and transport, and a lack of access to health care facilities. The researcher also observed that many primary school teachers engage in various behavioral practices, including smoking, alcohol consumption, and poor nutritional habits such as salt and animal fats. Collectively, these potential stressors, behaviors, and other variables seem to jeopardize the health and wellness of teachers by lowering their quality of life and leading to the development of hypertension, a condition known as a silent killer because it continuously damages the target organs until symptoms appear. Although primary school teachers work in an environment brimming with information, little or nothing is known about their knowledge of hypertension, the frequency and consistency of their blood pressure screening, or the barriers preventing them from accessing these procedures in the state. It would be beneficial and productive if they had a better understanding of hypertension and blood pressure screening. The study therefore assessed primary school teachers' knowledge of risk factors for hypertension in Gwoza Local Government Area, Borno State.

Objective of the Study

The objectives of the study was to determine:

Knowledge of risk factors for hypertension among primary school teachers in the Gwoza Local Government Area, Borno State

Research Question

The study answered the research question:

What is the knowledge of risk factors for hypertension among primary school teachers?



Hypothesis

Ho₁ There is no significant difference in knowledge of risk factors for hypertension between male and female primary school teachers in the Gwoza Local Government Area Borno State.

Methodology

The adopted cross-sectional descriptive survey design. Bowling (2002) asserted that cross-sectional descriptive survey designs describe the facts and characteristics of a given population of interest systematically, factually, and accurately. Babbie (2008) demonstrated that a survey design was useful for descriptive purposes if the population was too large to observe directly. The researcher employed this method due to its ability to gather information about the study's target population, specifically their knowledge of hypertension and blood pressure screening.

Population of the study were 953 primary school teachers working in Gwoza Local Government Area of Borno State (BOSUBEB, 2023), Ogbazi and Okpala (1994) recommended that if the population for the study is large, 10–30% of the population could be taken as the sample size for a study, and is adequate for survey research. Therefore, 219 Primary school teachers which are (23%) were used as a sample of the study. Proportionate sampling was used to select 219 respondents from 286 teachers out of 22 selected schools.

The researcher used simple random sampling techniques to select 22 primary schools out of 106 for data collection. On a separate sheet of paper, the researcher assigned numbers 1 to 106 to all primary schools. Pieces of paper with numbers 1 to 106 correspond to the number of primary schools folded in a box. Researcher dipped hands randomly, with replacing any numbers, and recorded up to 22 times, representing the schools where data were collected.

Simple random sampling technique was used to select respondents at their schools. In Agapalawa primary school, on 12 pieces of paper, YES was written on 9 pieces, NO was written on 3 pieces of papers and was put in the bag after reshuffling respondent picked one paper at time, those that picked YES were included as the respondents and those that picked NO were not part of the respondents, these was repeated across the selected schools.

A self- developed instrument that consists of 35 items tagged: Risk Factors for Hypertension among Primary School Teachers in Gwoza Local Government Area Questionnaire (RFHQ) to assess teachers' knowledge about risk Factors for Hypertension. The study involved 219 teachers who responded by filling out the questionnaire. To ensure the validity of the instrument, it was given to the researcher's supervisors and two other lecturers in the Department of Physical and Health Education, University of Maiduguri for face and content validity. To ensure reliability of the instrument, test-retest method was used, twenty five copies of the validated instruments was administered to primary school teachers who were not part of the study, but had similar characteristics as primary school teachers in the same study area, and the instrument was also administered for the second time on the same respondents at the interval of three weeks. Completed copies of questionnaire were



collected and analyzed using Cronbach's alpha coefficient for internal consistency. A reliability coefficient of >0.78 and <0.85 were obtained and considered acceptable.

After preliminary examination to assess the sufficiency and reliability of the questionnaire retrieved in relation to the study objectives it was found that 19 respondents (8.5%) had not adequately completed their questionnaire. Therefore, nineteen questionnaires, representing 8.5 percent of the administered questionnaires, were considered inappropriate and were omitted from the data analysis, 200 completed questionnaire were used for data analysis. The data were analysed using descriptive statistics, frequency counts, and percentages to illustrate the demographic characteristics of the respondents. To answer research questions, the calculated mean, standard deviation, and aggregate mean of all items in variable were computed to determine the teacher's knowledge of risk factors for hypertension and cumulative scores of variables were also obtained. An independent sample t-test was employed to test hypotheses at significance level of 0.05.

Data Analysis and Results



Table 1: Demographic Characteristics of Respondents

Characteristics	N	%
Gender		
Male	125	62.5
Female	75	37.5
Age		
25-30 yrs	20	10.0
31-35 yrs	42	21.0
36-40 yrs	53	26.5
41-45 yrs	46	23.0
46-50 yrs	23	11.5
51 years and older	16	8.0
Educational Qualification		
NCE	169	84.5
Bsc.Ed./B.A.Ed	31	15.5
Marital Status		
Single	28	14.0
Married	158	79.0
Divorced	8	4.0
Widow/Widower	6	3.0
Rank		
Classroom Teacher	157	78.5
Assistant Head Teacher	22	11.0
Head Teacher	21	10.5
Years of work experience		
10-20yrs	73	36.5
21-30yrs	99	49.5
31-40yrs	28	14.0

Table 1 shows the demographic characteristics of respondents. Males comprise 125 (62.5%), while females comprise 75 (37.5%). Respondents aged 25–30 years, 20 (10.0%). 31-35 years, 42 (21.0%) 36–40 years,



53 (6.5%) 41-45 years 46 (23.0%). 46-50 years (11.5%). 51 years and older (8.0%). Educational qualification: NCE 169 (84.5%). Bsc.Ed./B.A.Ed. 31 (15.5%). Marital Status, Single 28 (14.0%), Married 158 (79.0%), Divorced 8 (4.0%), and Widow/Widower 6 (3.0%). Rank: Classroom Teacher 157 (78.55%), Assistant Head Teacher 22 (11.0%), Head Teacher 21 (10.5%). Years of working experience: 10-20 years: 73 (36.5%), 21-30 years: 99 (49.5%), 31-40 years: 28 (14.0%).



Research Question: What is the knowledge of risk factors for hypertension among primary school teachers?

Table 2: Statistical Distribution of responses on Knowledge of Risk Factors for Hypertension among Primary School Teachers in Gwoza Local Government Area of Borno State.

Items Statement	SA		A		UD		D		SD		Mean	Std. Dev
	n	%	n	%	n	%	n	%	n	%		
Lack of participation in physical activity leads to hypertension.	132	(66)	54	(27)	4	(2)	6	(3)	4	(2)	1.48	.844
Consumption of too-salty meals poses a risk for hypertension.	54	(27)	102	(51)	36	(18)	4	(2)	4	(2)	2.01	.845
Eating a too-fatty meal can cause hypertension.	82	(41)	107	(53.5)	3	(1.5)	5	(2.5)	3	(1.5)	1.70	.757
Cigarette smoking may lead to hypertension.	88	(44)	98	(49)	5	(2.5)	6	(3)	3	(1.5)	1.69	.792
Too much stress can cause hypertension.	82	(41)	101	(50.5)	4	(2)	9	(4.5)	4	(2)	1.76	.858
Obesity or being overweight can lead to hypertension.	86	(43)	92	(46)	6	(3)	9	(4.5)	7	(3.5)	1.80	.958
Hypertension runs in a family.	76	(30)	100	(50)	4	(2)	9	(4.5)	11	(5.5)	1.90	.134
An increase in age may cause hypertension.	72	(36)	87	(43.5)	15	(7.5)	12	(6)	14	(7)	1.24	1.14
Excessive alcohol intake can cause hypertension.	85	(42.5)	98	(49)	3	(1.5)	7	(3.5)	7	(3.5)	1.76	.919
An increase in blood pressure can cause hypertension.	83	(41.5)	93	(46.5)	4	(2)	9	(4.5)	11	(5.5)	1.86	1.18

Mean M = 1.8000 (SD =.28812),

Table 2 displays the number and percentage of respondents' responses, indicating the degree of agreement with each item statement regarding the respondent's understanding of risk factors for hypertension. Lack of participation in physical activity leads to hypertension 132 (66%) respondents strongly agree. 54 (27%) of respondents agreed, 4 (2%) were undecided, 6 (3%) disagreed, and 4 (2%) respondents strongly disagreed. Consumption of too-salty meals poses a risk for hypertension. 54 (27%) respondents strongly agree. 102 (51%) of respondents agreed, 36 (18%) were undecided, 4 (2%) disagreed, and 4 (2%) strongly disagreed. Eating too much fat can cause hypertension and 82 (41%) respondents strongly agreed. 107 (53.5%) respondents agreed, 3



(1.5%) respondents were undecided, 5 (2.5%) respondents disagreed, and 3 (1.5%) respondents strongly disagreed. Cigarette smoking may lead to hypertension, with 88 (44% of respondents) strongly agreeing. 98 (49%) respondents agreed, 5 (2.5%) respondents were undecided, 6 (3%) respondents disagreed, and 3 (1.5%) respondents strongly disagreed. Too much stress can cause hypertension. 82 (41%) of respondents strongly agree. 101 (50.5%) respondents agreed, 4 (2%) respondents were undecided, 9 (4.5%) respondents disagreed, and 4(2%) respondents strongly disagree. Obesity/overweight can lead to hypertension had 86(43%) respondents strongly agree 92(46%) respondents that agree, 6(3%) respondents were undecided while 9(4.5%) respondents disagree and 7(3.5%) respondents strongly disagree. Hypertension run in a family had 76(30%) respondents strongly agree 100(50%) respondents that agree, 4(2%) respondents were undecided while 9(4.5%) respondents that disagree and 11(5.5%) respondents strongly disagree. Increase in age may cause hypertension had 72(36%) respondents strongly agree 87(43.5%) respondents that agree, 15(7.5%) respondents were undecided while 12(6%) respondents disagree and 14(7%) respondents strongly disagree. Excessive alcohol intake can cause hypertension, had 85(42.5%) respondents strongly agree 98(49%) respondents that agree, 3(1.5%) respondents were undecided while 7(3.5%) respondents disagree and 7(3.5%) respondents strongly disagree. Increase in blood pressure can cause hypertension, had 83(41.5%) respondents strongly agree 93(46.5%) respondents that agree, 4(2%) respondents were undecided while 9(4.5%) respondents disagree and 11(5.5%) respondents strongly disagree.

H₁: There is no significant difference in knowledge of risk factors for hypertension between male and female primary school teachers in Gwoza Local Government Area of Borno State

Table 3: Independent Samples t-test on Knowledge of Risk Factor for Hypertension among Primary School Teachers in Gwoza Local Government Area Borno State Based on Gender

Gender	Mean	SD	Sig	T	df	P
Male	1.7624	.27110	.936	.724	198	.470
Female	1.7333	.28060				

Table 3: Shows an independent sample t-test was conducted on Knowledge of Risk Factor for Hypertension among Primary School Teachers in Gwoza Local Government Area Borno State. The result revealed no significant difference $t(198) = .724, p = .470$. The mean scores were male ($M = 1.7624, SD = .27110$), and female ($M = 1.7333, SD = .28060$). The study found a small mean difference of 0.0291, with a 95% confidence interval ranging from .0509 to .1090 as a result; the study accepts the null hypothesis.

Discussion

The findings of this study indicated that primary school teachers in Gwoza Local Government Area do not have knowledge on risk factors for hypertension and this was align with those of Nwoga, (2023), which evaluated the



risk factors for hypertension among employees of a Nigerian tertiary institution. Their research concluded that the majority of employees did not know their blood pressure reading, and that non-modifiable risk factors (such as a family history of hypertension) and modifiable risk factors (such as alcohol consumption and exercise) were significant risk factors for hypertension in the population they studied. It was suggested that education be focused on both of these areas. The study's findings also differs from Debora, Tolimba, Palunggi, Siregar, Harefa, (2023), whose investigation focused on the risk factors for hypertension in adults residing in Mapanget Village, North Minahasa. Their research revealed a connection between obesity, smoking, physical activity, alcohol intake, and family history of hypertension. It is advised that individuals maintain a healthy lifestyle by managing their weight and blood pressure, abstaining from alcohol and tobacco, and participating in activities that are suitable for their current level of fitness. The results of this study are consistent with those of Abdullahi and Amzat's (2011) investigation at the University of Ibadan in Nigeria, which looked at students' knowledge of the risk factors and problems related to hypertension. Their descriptive statistics revealed that certain employees had comparatively poor attitudes regarding the illness and little knowledge of the risk factors.

Finding of the study differs from that of Rashida, Ruzina, Kowsar, Hena, Monika, Farjana, Tahera, and Farzana (2023) which assessed nurses' knowledge regarding risk factors for hypertension at Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh. Their research showed that their knowledge of the risk factors for hypertension was moderate. The results of this study do not support the findings of Ataklte, Erqou, Kaptoge, Taye, Echouffo-Tcheugui, and Kengne (2015), who investigated the rise in the prevalence of hypertension during the previous few decades in Sub-Saharan Africa. According to their assessment, Sub-Saharan Africa has a high prevalence of hypertension but a low percentage of people who are aware of, treating, or controlling their condition. This underscores the need for prompt and adequate implementation of programs for diagnosis, control, and prevention.

Conclusion

It was concluded that most primary school teachers in Gwoza Local Government Area do not have knowledge on risk factors for hypertension.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Gwoza Local Education Authority should organize teacher specific health promotion programme to raise awareness about hypertension.
2. Borno State Universal Basic Education Board (BOSUBEB), in collaboration with health agencies should organize workshop to educate teacher on knowledge of risk factors hypertension and other non-communicable diseases.
3. Borno State Universal Basic Education Board and Ministry of Education should improve welfare packages and review the teachers' monthly income.



References

- Abdullahi, A.A., & Amzat, J. (2011). Knowledge of hypertension among the staff of the University of Ibadan, *Nigerian Journal of Public Health and Epidemiology*, Vol. 3(5), pp. 204-209.
- Ataklte, F., Erqou, S., Kaptoge, S., Taye, B., Echouffo-Tcheugui, J. B., & Kengne, A.P. (2015). The burden of undiagnosed hypertension in sub-Saharan Africa: a systematic review and meta-analysis. *Hypertension*; 65(2):291–8.
- Ayanniyi, O., Akinremi, A., Odunnaiya, N., & Adenaike, I. (2016). Cardiovascular disease risk among professionals: A survey of modifiable risk factors among teachers in an urban community. *Highland Medical Research Journal*, 16(1), 1–5.
- Babbie, E. R. (2008). *The practice of social research*: Belmont, CA: Wadsworth Publishing Company.
- Bakker EA, Sui X, Brellenthin AG, & Lee DC. (2018). Physical activity and fitness are important for the prevention of hypertension. *Curr Opin Cardiol. Jul*;33(4):394-401.
- Bosu, K. W. (2010). Epidemic hypertension in Ghana: asystematic review. *BMC Public Health*
- Bowling, A. (2002). *Research methods in health: investigating health and health services / Ann Bowling*.– 2nd ed. Open University Press Buckingham • Philadelphia
- Cheung, E. L., Bell, C. S., Samuel, J.P., Pofenbarger, T., Redwine, K. M., & Samuels, J. A. (2017). Race and obesity in adolescent hypertension. *Paediatrics* 2017; 139(5):e20161433.
- Debora, C., Tolimba, C., Palunggi, S., Siregar, D., & Harefa, L. (2023). Risk Factors for Hypertension Among Adults Living in a Rural Area, *Minahasa Journal Keperawatan Indonesia*, Vol. 1, March, 36–45. DOI: 10.7454/jki.v26i1.2527
- Farag, Y. M., Mittal, B. V., Keithi-Reddy, S. R., Acharya, V. N., Almeida, A. F., C. A. Singh, A. K. (2014). Burden and predictors of hypertension in India: results of the SEEK (Screening and Early Evaluation of Kidney Disease) study. *BMC Nephrology*, 15, 42. <https://doi.org/10.1186/1471-2369-15-42>
- Girish, B., & Sumanth, M. M. (2017). A study of hypertension and its risk factors among primary school teachers in Tumkur, Karnataka. *Indian Journal of Forensic and Community Medicine*, January–March; 4(1):54–58
- Kar, S. (2015). Fast food and physical inactivity are risk factors for obesity and adolescent school children in East District of Sikkim, *Indian journal of natural science, biology and medicine* 6 (2) 356
- Meher, M., Pradhan, S., & Pradhan, S. (2023). Risk Factors Associated with Hypertension in Young Adults: A Systematic Review. *Cureus* 15(4): e37467. DOI 10.7759/cureus. 37467



- Nwoga, O. H. (2023). Assessment of Risk Factors for Hypertension among the Staff of a Tertiary Institution in Nigeria *European Journal of Medical and Health Sciences*.
- Ogbazijn&Okpala, J. (1994). Writing a research report on a guide for research in education, social science, and the humanities, Enugu Press Ltd.
- Pedwindé, H. S., Salam, O., Simon, A., Bernard, S., Denis, Y., Brice, W.B., Yacouba, S., Hyacinthe, E.S., Agballa, Mébiny-Essoh, T. A., Amado, T., Moussa, K., Abdoulaye, N., Harouna, S., André, M., Mamadou, S., Oumarou, B., & Patrice, Z. (2022). Risk Factors for Hypertension in Koumbri Municipality, Burkina Faso, December 2016–April 2017. *Journal of Interventional Epidemiology and Public Health*, December, 5(4):4
- Wijayathunge, L. A. D. N. L., & Hettiaratchi, U. P. K. (2017). Assessment of knowledge and risk factors of hypertension among school teachers in a selected district in the North Central Province of Sri Lanka. *International Journal of Scientific and Research Publications*, 7(11), 225–231.
<https://www.ijsrp.org>
- World Health Organisation (2013). A global brief on hypertension: silent killer, global public healthDay www.who.int/cardiovascular diseases/publications/globalbrief_hypertension/en/ (accessed June 18, 2017).