Using the WHO Health Systems Framework to Assess Health Systems Factors Influencing Hypertension Control in Ghana

Olatoyosi Grace Akinrotimi, MPH & Juliet Iwelunmor, PhD

Department of Kinesiology & Community Health, College of Applied Health Sciences, University of Illinois at Urbana-Champaign



Introduction



- Hypertension has being clearly documented to be a serious public health issue in both rural and urban communities in Ghana ¹⁻¹⁷
- More importantly, it has been identified that the rates of hypertension detection, treatment and control remain
 low despite several proposed interventions¹⁻¹⁷
- As a result, innovative strategies developed from a
 health systems approach might be needed to manage
 hypertension in the general population in Ghana
- Although it has been recognized that effective health
 systems is vital to improving health outcomes, the focus
 on health systems strengthening and its impact on
 hypertension control in Ghana is not clear¹

Aim

To critically examine current literature in order to identify the health systems factors influencing hypertension awareness, treatment and control in Ghana

Method

Search strategy

The analysis was conducted primarily in the context of hypertension control. The WHO framework for health systems strengthening (HSS) was used to map the framework for achieving optimal hypertension in Ghana (Figure 2).

- Databases searched: PubMed, EbscoHost
- Combined keywords search: high blood pressure, hypertension,
 Ghana, health systems, awareness, treatment, control,
 treatment guidelines, medication adherence, health facilities,
 finances, workers, policies, governance

Inclusion Criteria

- Journal articles published between 1990 to 2015
- Full-text studies that reported on the health systems factors influencing hypertension control
- Studies reporting on gaps in Ghana's health system and making recommendations for improving service delivery with regards to hypertension control

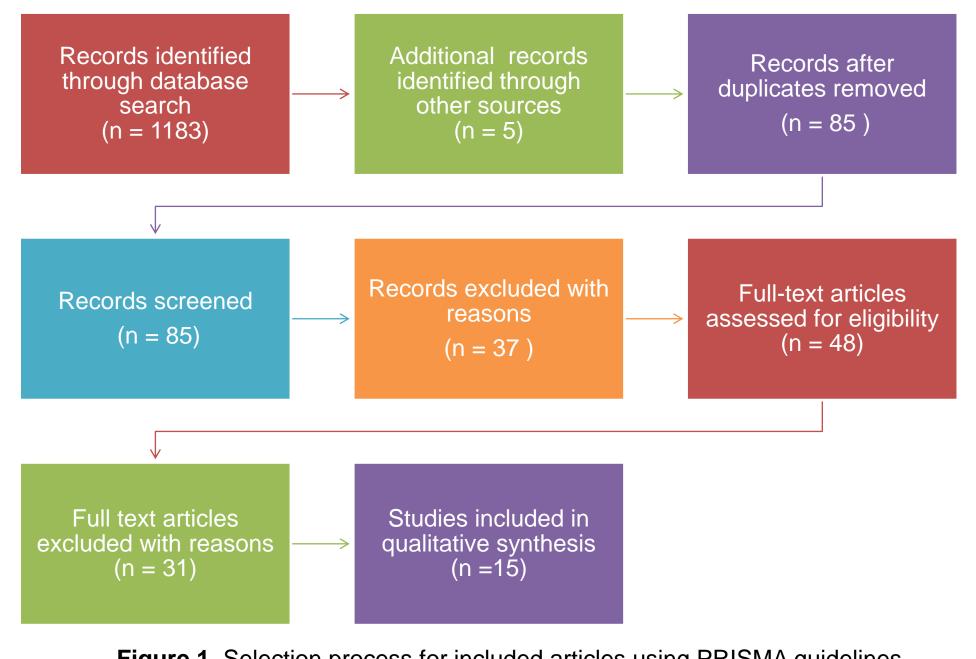


Figure 1. Selection process for included articles using PRISMA guidelines

Leadership and governance

- Strong political commitment backing hypertension control efforts
 Covernance ensuring the establishment of appropriate policies of
- Governance ensuring the establishment of appropriate policies combined with effective coalitions
- Incentives for the administration of hypertension management and accountability

Health financing

 Timely availability of financial resources to implement the strategic plan from researchers and health educators to ensure that all population at risk for hypertension are covered without bearing excessive personal cost

Health workforce

Sufficient and well trained workforce that is fairly distributed around the country
Responsive, fair and efficient staff delivering interventions with highest possible quality to manage hypertension in the population given available resources and circumstances

Health information systems

- Timely production, analysis, dissemination and use of reliable information on health determinants, health systems performance and health status
- Proper information technology and mapping, logistic monitoring and evaluation of hypertension in the general population

Medical products, infrastructure and technology

 Adequate procurement and supply management to ensure uninterrupted supply of cost effective medications, commodities and tools for hypertension detection, diagnosis and management, which are accessible to all populations at risk

Service delivery

 Delivery of comprehensive package of cost effective and quality hypertension management interventions, where and when needed through health facilities and community based structures with minimum waste of resources

Figure 2. WHO framework for health systems strengthening for achieving optimal hypertension control

in Ghana

Results

Author	Study design, sample size and setting	Health system factor/barrier identified	Detailed hypertension-related findings & Recommendations for hypertension control
Boima et al., 2015	Cross-sectional study; n= 120; Urban Ghana	Insurance status	Medication on-adherence (MNA) was associated with formal education and use of herbal preparation. MNA was found in 61.7% of uninsured participants versus 73.1% of insured participants. Poor BP control was observed in 69.7% and there was significant association between MNA and poor BP control
Bosu, 2010	Systematic review	High medication cots Poor training of health care workers Absence of treatment guidelines Lack of health programs for hypertension management Lack of chronic disease management and salt reduction policies	Low compliance to treatment Alternate use of herbal treatment Inadequate counseling of patients
Bosu, 2012	Systematic review	Low funding Inefficient program management Little political interest Low community awareness High medication costs Absence of structured screening programs	Effective and speedy implementation of proposed interventions hindered
Buabeng et al., 2004	Patient interviews; n = 128 ; Urban Ghana	Unaffordable drug costs	Non-compliance with medication
Cappuccio et al., 2004	Cross-sectional; n= 1013; semi-urban and rural Ghana	Absence of a national control program and national guidelines for the detection and management of hypertension	Low levels of detection, treatment and control of HT
De-Graft Aikins et al., 2012	Focus group discussions; n= 51; Urban Ghana	Poor knowledge of chronic diseases and their risk factors	Need for training health experts to provide accurate information in practical language that lay people can understand and apply to their daily lives Need to develop sustainable behavior-change interventions
De-Graft Aikins et al., 2010	Commentary	High cost of care Poor knowledge and attitudes of health practitioners Absence of chronic disease policies Congestion of tertiary level facilities	Increased risk, morbidity and mortality from major chronic conditions, including hypertension
De-Graft Aikins et al., 2012	Systematic review of chronic disease research, interventions, and policy in Ghana and Cameroon	Absence of chronic disease policies	Ghana does not have a chronic disease policy but has a national health insurance policy that covers drug treatment of some chronic diseases, a culture of patient advocacy for a broad range of chronic conditions and mass media involvement in chronic disease education
Harries et al., 2005	Prospective cohort study; n = 86; Renal Hypertension Clinic at Komfo Anokye Teaching Hospital in Kumasi	High medication cost Lack of chronic disease education	Noncompliance with medication Reliance on alternate sources of treatment
Kretchy et al., 2014	Cross-sectional study; n = 400; Urban Ghana	Attitude of healthcare professionals High medication costs Lack of chronic disease education	About 70% of CAM users had not disclosed their CAM use to their healthcare professionals citing fear and the lack of inquiry by these health professionals as the main reasons for non-disclosure. Participants who could not afford their medications had 3.85 times likelihood of CAM use than those who could afford their medicines. In addition, a significant relationship between CAM use and experiences of anti-hypertensive side effects was observed,. CAM users were 2.22 times more likely to be non-adherent than participants who did not use CAM
Kretchy et al., 2014	Hospital-based cross- sectional study; n = 400; southern and northern Ghana	Lack of multifaceted intervention programs	Medication non-adherence, experiences of medication side effects and LoC are associated Recommendation to develop multifaceted intervention programs highlighting personality characteristics like LoC may improve anti-hypertensive medication adherence
Kretchy et al., 2014	Hospital-based cross- sectional study; n = 400; southern and northern Ghana	Training of health professionals	Need for clinicians to pay attention to negative emotions and their role in medication non-adherence Recommendation to direct attention towards the use of spirituality as a possible mechanism by which negative emotions could be managed among hypertensive patients
Ogedegbe et al 2014	Cluster randomized trial (in-progress); n = 640; Urban Ghana	Poor access to care High out-of-pocket costs Burden on limited health workforce	Recommendation to use cost-effective strategies such as task-shifting
Plange-Rhule et al., 1999	Cohort study; n =3317; Urban Ghana	Absence of specialist health facilities	Few facilities available for the detection and management of hypertension
Spencer et al., 2005	Cross sectional survey and qualitative interviews; n = 100; Urban Ghana	Poor knowledge of chronic diseases and risk factors	Recommendation to provide culturally competent patient education about hypertension

Figure 3. Health system factors associated with hypertension control in Ghana

Conclusions

- As the burden of hypertension increases in Ghana, innovative strategies to treat and control the disease need to be developed
- More information must be gathered in the broad domains of the health system framework to inform policies, programs and other health system interventions to achieve optimal control of hypertension in Ghana

References

- lwelunmor, J., Plange-Rhule, J., Airhihenbuwa, C. O., Ezepue, C., & Ogedegbe, O. (2015). A Narrative Synthesis of the Health Systems Factors Influencing Optimal Hypertension Control in Sub-Saharan Africa. PLoS One, 10(7), e0130193. doi:10.1371/journal.pone.0130193
 Pobee, J. O. (1993). Community-based high blood pressure programs in sub-Saharan Africa. Ethn Dis, 3 Suppl, S38-45.
- Nyame, P. K., Bonsu-Bruce, N., Amoah, A. G., Adjei, S., Nyarko, E., Amuah, E. A., & Biritwum, R. B. (1994). Current trends in the incidence of cerebrovascular accidents in Accra. West Afr J Med, 13(3), 183-186.
 Amoah, A. G. (2003). Hypertension in Ghana: a cross-sectional community prevalence study in greater Accra. Ethn Dis, 13(3), 310-315.
- Amoah, A. G. (2003). Hypertension in Ghana: a cross-sectional community prevalence study in greater Accra. Ethn Dis, 13(3), 310-315.
 Cappuccio, F. P., Micah, F. B., Emmett, L., Kerry, S. M., Antwi, S., Martin-Peprah, R., . . . Eastwood, J. B. (2004). Prevalence, detection, management, and control of hypertension in Ashanti, West Africa. Hypertension, 43(5), 1017-1022. Retrieved from https://hyper.ahajournals.org/content/43/5/1017.full.pdf
 Agyemang, C., Redekop, W. K., Owusu-Dabo, E., & Bruijnzeels, M. A. (2005). Blood pressure patterns in rural, semi-urban and urban children in the Ashanti region of Ghana. West Africa. BMC Public Health.
- Addo, J., Amoah, A. G., & Koram, K. A. (2006). The changing patterns of hypertension in Ghana: a study of four rural communities in the Ga District. Ethn Dis, 16(4), 894-899.
 Agyemang, C. (2006). Rural and urban differences in blood pressure and hypertension in Ghana, West Africa. Public Health, 120(6), 525-533. doi:10.1016/j.puhe.2006.02.002
 Agyemang, C., Bruinzeels, M. A., & Owusu-Dabo, E. (2006). Factors associated with hypertension awareness, treatment, and control in Ghana, West Africa. J Hum Hypertens, 20(1), 67-71.
- 10. Burket, B. A. (2006). Blood pressure survey in two communities in the Volta region, Ghana, West Africa. Ethn Dis, 16(1), 292-294.

 11. Duda, R. B., Kim, M. P., Darko, R., Adanu, R. M., Seffah, J., Anarfi, J. K., & Hill, A. G. (2007). Results of the Women's Health Study of Accra: assessment of blood pressure in urban women. Int J Cardio 117(1), 115-122. doi:10.1016/j.ijcard.2006.05.004
- 117(1), 115-122. doi:10.1016/j.ijcard.2006.05.004
 12. Hill, A. G., Darko, R., Seffah, J., Adanu, R. M., Anarfi, J. K., & Duda, R. B. (2007). Health of urban Ghanaian women as identified by the Women's Health Study of Accra. Int J Gynaecol Obstet, 99(2), 150-156. doi:10.1016/j.ijgo.2007.05.024
 13. High blood pressure in urban Ghana. (2008). Ethn Dis, 18(4), 522.
- 14. Addo, J., Smeeth, L., & Leon, D. A. (2008). Prevalence, detection, management, and control of hypertension in Ghanaian civil servants. Ethn Dis, 18(4), 505-511.

 15. Addo, J., Smeeth, L., & Leon, D. A. (2009). Hypertensive target organ damage in Ghanaian civil servants with hypertension. PLoS One, 4(8), e6672. doi:10.1371/journal.pone.0006672

 16. Kunutsor, S., & Powles, J. (2009). Descriptive epidemiology of blood pressure in a rural adult population in Northern Ghana. Rural Remote Health, 9(2), 1095

 17. Bosu, W. K. (2010). Epidemic of hypertension in Ghana: a systematic review. BMC Public Health, 10, 418-418. doi:10.1186/1471-2458-10-418
- Awuah, R. B., Anarfi, J. K., Agyemang, C., Ogedegbe, G., & Aikins, A. (2014). Prevalence, awareness, treatment and control of hypertension in urban poor communities in Accra, Ghana. *J Hypertens*, 32(6), 1203-1210. doi:10.1097/hjh.00000000000000165
 Basu, S., & Millett, C. (2013). Social epidemiology of hypertension in middle-income countries: determinants of prevalence, diagnosis, treatment, and control in the WHO SAGE study. *Hypertension*, 62(1), 18-26. doi:10.1161/hypertensionaha.113.01374
- Boima, V., Ademola, A. D., Odusola, A. O., Agyekum, F., Nwafor, C. E., Cole, H., . . . Tayo, B. O. (2015). Factors Associated with Medication Nonadherence among Hypertensives in Ghana and Nigeria. *Int J Hypertens, 2015*, 205716. doi:10.1155/2015/205716
 Bosu, W. K. (2010). Epidemic of hypertension in Ghana: a systematic review. *BMC Public Health, 10*, 418-418. doi:10.1186/1471-2458-10-418
 Bosu, W. K. (2012). A Comprehensive Review of the Policy and Programmatic Response to Chronic Non-Communicable Disease in Ghana. *Ghana Medical Journal, 46*(2 Suppl), 69-78. Retrieved from
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3645151/

 23. Cappuccio, F. P., Micah, F. B., Emmett, L., Kerry, S. M., Antwi, S., Martin-Peprah, R., . . . Eastwood, J. B. (2004). Prevalence, detection, management, and control of hypertension in Ashanti, West Africa.

 Hypertension, 43(5), 1017-1022. Retrieved from http://hyper.ahajournals.org/content/43/5/1017.full.pdf

de Graft Aikins, A., Anum, A., Agyemang, C., Addo, J., & Ogedegbe, O. (2012). Lay representations of chronic diseases in Ghana: implications for primary prevention. Ghana Med J, 46(2 Suppl), 59-68

Kretchy, I. A., Owusu-Daaku, F. T., & Danquah, S. (2014). Locus of control and anti-hypertensive medication adherence in Ghana. Pan Afr Med J, 17 Suppl 1, 13. doi:10.11694/pamj.supp.2014.17.1.3433

- Hypertension, 43(5), 1017-1022. Retrieved from http://hyper.ahajournals.org/content/43/5/1017.full.pdf
 de-Graft Aikins, A., Addo, J., Ofei, F., Bosu, W., & Agyemang, C. (2012). Ghana's burden of chronic non-communicable diseases: future directions in research, practice and policy. Ghana Med J, 46(2 Suppi 3. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3645141/pdf/GMJ462S-0001.pdf
 de-Graft Aikins, A., Boynton, P., & Atanga, L. L. (2010). Developing effective chronic disease interventions in Africa: insights from Ghana and Cameroon. Global Health, 6, 6. doi:10.1186/1744-8603-6-6
- Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3645147/pdf/GMJ462S-0059.pdf

 27. Harries, T. H., Twumasi-Abosi, V., Plange-Rhule, J., & Cappuccio, F. P. (2005). Hypertension management in Kumasi: barriers and prejudice? *J Hum Hypertens*, 19(12), 975-977. Retrieved from http://dx.doi.org/10.1038/sj.jhh.1001920
- http://dx.doi.org/10.1038/sj.jhh.1001920
 28. Hesse, I. F., & Nuama, I. (1997). Pattern of out-patient drug treatment of hypertension in Korle-Bu Teaching Hospital, Accra. West Afr J Med, 16(3), 133-138.
 29. Kretchy, I. A., Owusu-Daaku, F., & Danquah, S. (2014). Patterns and determinants of the use of complementary and alternative medicine: a cross-sectional study of hypertensive patients in Ghana. BMC Complement Altern Med, 14, 44. doi:10.1186/1472-6882-14-44
- Kretchy, I. A., Owusu-Daaku, F. T., & Danquah, S. A. (2014). Mental health in hypertension: assessing symptoms of anxiety, depression and stress on anti-hypertensive medication adherence. Int J Ment Health Syst, 8, 25. doi:10.1186/1752-4458-8-25
 Marshall, I. J., Wolfe, C. D., & McKevitt, C. (2012). Lay perspectives on hypertension and drug adherence: systematic review of qualitative research. Bmj, 345, e3953. doi:10.1136/bmj.e3953
- Nalshaii, F. J., Wolfe, C. D., & Mickevit, C. (2012). Lay perspectives on high classification and drug additional cerew of qualitative research. *Briti, 340*, e393. doi:10.1136/briti.25933. doi:10.1136/briti.
- Ogedegbe, G., Plange-Rhule, J., Gyamfi, J., Chaplin, W., Ntim, M., Apusiga, K., . . . Cooper, R. (2014). A cluster-randomized trial of task shifting and blood pressure control in Ghana: study protocol. *Implement Sci*, 9, 73. doi:10.1186/1748-5908-9-73
 Ohene Buabeng, K., Matowe, L., & Plange-Rhule, J. (2004). Unaffordable drug prices: the major cause of non-compliance with hypertension medication in Ghana. *J Pharm Pharm Sci*, 7(3), 350-352.
 Plange-Rhule, J., Phillips, R., Acheampong, J. W., Saggar-Malik, A. K., Cappuccio, F. P., & Eastwood, J. B. (1999). Hypertension and renal failure in Kumasi, Ghana. *J Hum Hypertens*, 13(1), 37-40.

38. Spencer, J., Phillips, E., & Ogedegbe, G. (2005). Knowledge, attitudes, beliefs, and blood pressure control in a community-based sample in Ghana. Ethn Dis, 15(4), 748-752.

countries: a systematic review of randomised controlled trials. BMJ Open, 4(10), e005983. doi:10.1136/bmjopen-2014-005983