

TACKLING RISING CASES OF STROKE AND HYPERTENSION AMONG YOUNG ADULTS THROUGH STRATEGIC COMMUNICATION IN NIGERIA

Adebayo John JAMES

Department of Mass Communication
Faculty of Social Sciences,
Federal University, Oye-Ekiti, Ekiti State, Nigeria
E-mail: adebayo.james@fuoye.edu.ng

Folarin Florence

Department of Mass Communication,
Anchor University, Ayobo, Lagos
E-mail: ffolarin@aul.edu.ng
Phone No: +2348036222665

Grace Oluwakemi ONIPEDE

Department of Mass Communication
Faculty of Social Sciences,
Federal University, Oye-Ekiti, Ekiti State, Nigeria
E-mail: oluwakemi.onipede@fuoye.edu.ng
Tel: +2348063014091

Abstract

Research evidences show that 5 million people die of stroke, and 5 million people are also left with permanent physical disability globally every year, due to the incidence of stroke. Stroke remains the third leading cause of mortality and physical disability among young adults and the aged in the developing and developed nations of the world. The public knowledge of stroke risk factors and signs have not changed. Heart attack and stroke are the symptoms of cardiovascular disease, morbidity and mortality worldwide. Stroke attack is increasing among young adults, due to changing lifestyles. This study assessed the influence of strategic communication on stroke and hypertension literacy. The paper adopted qualitative descriptive approach to examine the elements involved in stroke cases and rising hypertension among young adults in Nigeria. The paper recommends that public health campaigns targeted at youths should aim to promote cardiovascular health and wellness. It is essential for the health care providers to enlighten young adults at early stage to imbibe cardiovascular wellness in Nigeria. Besides, early arrival of stroke patients to stroke centres or hospitals for immediate medical attention should be widely emphasized through public education and strategic communication process in the media.

Keywords: Hypertension, Hypertension literacy; Strategic Communication; Stoke; Young Adults,

Introduction

Research evidences, as Vairale, Dalal, Bhattacharjee, and Gawali (2015) note, show that 5 million people die of stroke, and 5 million people are also left with permanent physical disability globally every year. World Health Organisation (2020) as cited by Rachmat (2022) declare stroke as one of the major global causes of death. Stroke, as Hodgson et al., (2009) observe, is a major cause of morbidity and mortality, and early and timely treatment is crucial to stroke patients securing timely healing. Stroke, as Flynn et al., (2014) maintain, remains the third leading cause of mortality and physical disability among young adults and the aged in the developing and developed nations of the world. The public knowledge of stroke risk factors and signs have not changed (Wada, et al., 2017). Stroke attack, as Komolafe et al., (2015) posit, is increasing among young adults, due to changing lifestyles.

The critical period of stroke management, according to Folyovich et al., (2017), is between the outset and emergency call. Cardiovascular disease, as Liu et al., (2020) remains a leading cause of mortality among young adults worldwide, and there are rare media campaigns that target young adults against stroke. An instant response to stroke attacks is vital to early healing process (Flynn et al., 2014). Atrial fibrillation, as Moloney (2021) avers, is a widely known risk factor for stroke, usually unrecognized before its stealth emergence. High blood pressure, high cholesterol, overweight and obesity, smoking, sedentary life and physical in-activities, as Rubinstein et al., (2009) aver, have been identified as risk factors of stroke. Life-saving stroke treatments, as Leighton-Herrman et al., (2016) maintain, is slowed down by late arrival to the hospital for treatment, majorly due to poor knowledge of symptoms of the disease.

Unlike acute stroke cases, awareness of pre-hospital delay reduces death in ischemic stroke patients (Nishijima et al., 2016). Although, Heart Foundation and Federal Ministry of Health have been running media campaigns to create public awareness, early detection and time protection from stroke attacks in Nigeria and a number of countries, Moloney (2021), the sudden stroke attacks have not abated, especially among rural dwellers, who have a restricted access to media of information and education. Although engaging in physical exercise and trekking for thirty or forty-five minutes, as Wray et al., (2005) maintain, have been identified to reduce the rising cases of stroke, cardiovascular diseases, colon cancer and diabetes, not many people are aware of or have embraced regular physical exercise, especially among non-educated young adults. Studies have long established that symptoms and recognition of imminent stroke attacks by the people are challenging and impacts of mass media on attitudinal or behavioural change with regard to stroke are uncertain (Frederic et al., 2013).

Although, media enlightenment campaigns and public education aimed at influencing positive attitude and behaviour to sudden stroke attacks, media campaigns have little impact on public behaviour (Flynn et al., 2014). Disrupting progression of stroke, according to Cook et al., (2021), depends largely on effective awareness, early detection of stroke symptoms and timely access emergency health care services. There are region-specific barriers, cultural and social impediments to obtaining stroke care at emergencies (Naftchi et al., 2021). There were no warning signs and risk awareness among young adults in Nigeria (Komolafe et al., 2015). Due to the fact that media of mass communication are urban-centric, knowledge of stroke, its symptoms, and risk factors are prevalent in the urban centres, however, the same cannot be said of rural areas where people heavily depend on opinion leaders for education and information about the menace of stroke (Kayode-Iyasere and Odiase, 2019). Public health campaigns are designed to create awareness, improve health literacy and influence the adoption of desirable attitude and behaviour by a target population (de Morais Pinto et al., 2021).

Methodology

Being a theoretical paper, this study made use of used secondary data such as journals, reference books, and other documentary information to the study.

Theoretical Framework

This study made use of the health Behaviour theory as a theoretical guide. Health behaviour model, as Yanuar et al., (2022) note, is used to explain how health belief factors are impacted to initiate healthy living behaviours. Health behaviour model is used to explain how people engage in behaviour to prevent stroke attacks or hypertension or affected by the disease and make attempts to manage it. Health behaviour model is relevant to this study because it could be used to predict health related behaviour on the basis of certain thought patterns (Yanuar et al., 2022).

The Health behaviour model is dependent on individuals' belief in healthy behaviour. The belief could be in form of preventive one or curative behaviour or even the use of health facilities (Yanuar et al., 2022). Health behaviour model is a theory that could help researchers explain the adoption or rejection of certain anti-stroke or anti-hypertension strategies (Abrams and Callahan, 2022). Health behaviour model is inherently linked with to the measurement of health behaviour (Redding et al., 2000). The Health behaviour model was developed in the West and had been widely tested applied to explain health issues (Lin et al., 2022). It has been used to analyse and explain certain health challenges such as stroke, hypertension, and other physical disabilities. Health behaviour model has been applied to many fields of health studies. Health behaviour model only works with fatal diseases.

The postulation of health behaviour model, as Brehmer-Rinder et al., (2014) note, is that people understand the concepts of health, diseases, illnesses and disabilities and impact the way they see or perceive themselves which behavioural approaches to those health challenges they assume or take. Heart attack and stroke are the main causes of cardiovascular disease, morbidity and mortality worldwide. Stroke attack is increasing among young adults, due to changing lifestyles.

Discussion

Tackling Issues of Stroke and Hypertension through Strategic Communication Process

It is evident that the mass media have helped to inform, create awareness and sustained the adoption of certain health behaviour among young adults in Nigeria (Qakisa, 2022). Paid advertising messages and other messages tailored towards reduction of stroke cases, as Lockhart et al., (2022) maintain, have increased public knowledge about symptoms of stroke and its early detection and prevention among young adults in Nigeria. Stroke literacy aided by strategic communication, as Han and Jang (2021) maintain, is very crucial in the early detection and prevention of stroke sudden attacks. It is unclear how effective media campaigns against stroke are, and the extent people translate the media campaigns into actions (Trobbiani et al., 2013).

Stroke literacy campaigns, according to Rasura et al., (2014), are deployed globally, but few assessments of those campaigns are in published literature. A number of countries, according to Wolters et al., (2013), have initiated and maintained media campaigns to promote symptom recognition of stroke, and seek timely medical care. Mass media campaigns, as Mellon et al., (2014) posit, create awareness and encourage people to take prompt actions to prevent stroke attacks. There are correlations between television advertising and increased knowledge of stroke among young adults bin Nigeria (Hodgson et al., 2007). Public awareness of symptoms of stroke

through mass media, as Urbankova et al., (2013) suggest, has not been adequate. Costly media campaigns about stroke literacy in an economically disadvantaged environment is tantamount to waste of resources because most of the targets of the messages are non-literate and live under extreme poor conditions (NCT, 2011).

A correlation, according to Barakat et al., (2022), exists between knowledge and awareness of stroke and educational level of the people and their exposure to media of communication. Although, e-health, as Corea et al., (2020) note, is becoming crucial in stroke awareness, knowledge and literacy, not many people in the rural areas of Nigeria have access to internet for e-health messages due to some certain factors among which are the illiteracy and low educational level. Media campaigns are used to expose large population to rising cases of stroke and other health-risk behaviours (Paiva et al., 2022). Hypertension affects over 1 billion people worldwide, making the disease a global health concern (Solomon et al., 2023). Too much dietary sodium is a contributory factor to cardiovascular disease, chronic disease and stroke. Physical inactivity, hypertension and non-communicable diseases are major public health concerns across the world (Cheal et al., 2023).

Rising cases of Hypertension in Nigeria

The rate of hypertension among children is between 2% and 5% unlike the higher prevalence of hypertension among young adults (Falkner et al., 2023). As Anjajo et al., (2023) aver, 11 million young adults die of hypertension in Africa due to acute illiteracy and poor medical attention aimed at arresting the scourge of the disease. Sub-Sahara Africa has an acutely high prevalence of hypertension among young adults with acutely high hypertension illiteracy (Galson et al., 2023). Hypertension is a significant cause of untimely death among young adults in Nigeria (Koya, et al., 2023). The public health significance of hypertension, as Mekonene et al., (2023) note, is attracting attention of policymakers and stakeholders in the health sector as well as government at various levels in low- and middle-income nations of the world. Hypertension affects 31.1% of adults worldwide, with higher incident, as Wu et al., (2023) posit, of hypertension in the elderly.

The prevalence of hypertension among diabetic patients is twice higher than non-diabetic patients (Anjajo et al., 2023). Parent-offspring association of hypertension is on the increase in sub-Saharan Africa (Jang et al., 2023). Hypertension is an increasing blood pressure in excess of normal value. 18.6 million people die globally every year as a result of cardiovascular disease, Malhotra et al., (2023) which is a leading cause of death among young adults. The complications arising from hypertension is due to untreated high blood pressure which can lead to heart attack, coronary artery disease, heart failure and even stroke (Nuraini, 2015). Poor adherence to treatment is not uncommon to clinical practice, precipitating uncontrolled high blood pressure (Roubsanthisuk et al., 2023). Death arising from cardiac and cerebro-vascular disease has been on the increase lately in Nigeria (Jeong, 2013).

There is a strong correlation between salt intakes and hypertension, myocardial infarction, stroke and select cancers (Szybinski et al., 2010). Neuropsychiatric disorder is a common complication from stroke and has negative effect on recovery, permanent physical disability or death among survivors (Zhang et al., 2020). Cardiovascular disease, heart disease and stroke are leading causes of pre-mature death in Africa and beyond (Tiscornia et al., 2013). Hypertension is a major causal or risk factor for cardiovascular diseases (Tiscornia et al., 2013). A diet high in salt, as Beauchamp et al., (2017) observe, is a causal factor of heart diseases and stroke.

There is a strong association between age, sex, primary headache, obesity and hypertension (Kumar, et al., 2017). While media of communication in Nigeria have failed their responsibility test in the creation of awareness and knowledge about cardiovascular diseases and stroke literacy, radio and ethno-communication media should be adopted to raise the level of awareness and literacy among `young adults Klassen et al., (2021). Cardiovascular prevention, as Mazza et al., (2016) maintain, could be achieved through nutritional or lifestyle changes. While diet management can help reduce hypertension, not many young adults are gainfully engaged to eat a balanced diet in Nigeria, due to economic situations (Susanto et al., 2023).

Growing Cases of Stroke among Young Adults in Nigeria

Stroke and hypertension among young adults are still crucial public health challenges in Nigeria (Kundu, et al., 2023). As Urbankova et al., (2013) maintain, 2 million young adults die annually due to stroke attacks. The evidence that stroke affects cognitive, communicative and arm explains poor response to early detection of stroke symptoms (Alberts, 2012). Stroke, as Farhoudi and Sharifipour (2022) note, is a leading cause of mortality and morbidity in Nigeria and Iran. Stroke, as Bogousslavsky et al., (1996) posit, is a major cause of mortality and physical disability in the industrialized countries, due to poor stroke literacy.

Stroke is a global health issue (Khalil and Lahoud, 2020). While young adults and old people are vulnerable to stroke, evidence suggests that have acute stroke illiteracy (Khalil and Lahoud, 2020). In a minority, economically disadvantaged populations, NCT (2011), stroke literacy and knowledge of its symptoms is brutally poor. Stroke, as Kayode-Iyasere and Odiase (2019) maintain, is the main cause of morbidity and mortality, and public awareness with regard to symptoms of stroke is extremely poor. In the same vein, Urbankova et al., (2013) affirm that stroke is the most common causes of death and permanent physical disability in young adults. Also, Rasura et al., (2014) affirm that stroke is the leading cause of long-term disability and eventual death. Education about stroke is usually hospital-based in Nigeria.

The prevalence of stroke in sub-Sahara Africa, as Alkali et al., (2016) observe, could be attributable to under-diagnosis and under-treatment of hypertension, hyperlipidemia and atrial fibrillation. Pre-hospital procrastination in accessing medical care for acute stroke usually, as Mellon et al., (2014) observe, attracts the unwanted. The most incorrect symptoms of stroke usually cited are the pains in the arm, chest pains and shortness of breath. However, the most common symptoms, as Bray et al., (2011) posit, are the paralysis or weakness in the arm, face, leg and speech difficulties. Public awareness of symptoms of stroke, as Silver et al., (2003) aver, is crucial to early healing process. Heart Foundations, Federal and state Ministries of Health have designed anti-stroke programmes aimed at stemming the tide of rising stroke attacks (Hundt and Chen, 2017).

There is a correlation between ceaseless smoking and risk of stroke (Hanrahan et al., 1996). Stroke, as Barakat et al., (2021) maintain, is associated with different demographic factors such as gender, income, socio-economic values and females versus males. Stroke patients with acute cases of speech and arm impairment, as Inam et al., (2021) posit, are unable to provide consent and, therefore, get excluded from research participation. Hypertensive patient-centred strategies and adherence to medications may reduce the morbidity and mortality associated with hypertension (Boima, et al., 2023). Reduction of stress, low salt intakes, non-smoking, abstinence from alcohol, medication adherence, lifestyle modification, increased physical activities, and increased self-monitoring remain effective methods to fight growing hypertension among young adults in Nigeria (Konlan and Sin, 2023).

Mapping the Way Out of Growing Cases of Hypertension and Stroke in Nigeria

Public health campaigns targeted at youths should aim to promote cardiovascular health and wellness. It is essential for the health care providers to enlighten the young adults at early stage to promote cardiovascular wellness among young adults in Nigeria across divides. Besides, early arrival of stroke patients to stroke centres or hospitals for immediate medical attention should be widely emphasized through public education and strategic communication process in the media. Face, Arm, Speech and Time (FAST) awareness, knowledge and literacy should be initiated and maintained by the Federal Ministry of Health and Ministries of Health across states to promote availability of information in the public space about signs of stroke and immediate medical response in Nigeria. Community-based media campaigns that promote wellness and cardiovascular health should be employed in most urban and rural areas of Nigeria. Community-based media have credibility, better and more effective access, and are more effective than the conventional media of mass communication.

Traditional methods of education, information and enlightenment campaigns have proven to be more effective than conventional media of mass communication, especially for those who live in the rural areas of Nigeria. Therefore, house-to-house campaigns, traditional newsmen, village square meetings and itinerant information vans should be deployed as a means of rural and urban education, information and enlightenment of the people with regard to early symptoms and detection and prevention of stroke attacks.

Although, television has been identified as a major source of information for stroke-related messages, young adults also prefer sourcing information on social media and internet, especially those who live in the urban centres. Consequently, campaigns and sensitization messages should make use of social media and internet to reach the young adults. Community-based organisations and ethno-communication media should be co-opted on the march to sensitization and education of the young adults, especially those who reside in the remotest parts of the rural areas of Nigeria. Television, newspaper, internet, poster, flier and billboard have failed integrity test and social responsibility with regard to dissemination of information in the remotest part of Nigeria. And therefore, carefully conceived on ethno-communication media, effectively designed and culturally specific messages would help to eliminate barriers in knowing the symptoms of stroke.

Establishment of Acute Stroke Units in all the state government-owned hospitals across 774 Local Government Areas of Nigeria is crucial to prevent and minimize the growing cases of stroke. Exercising is extremely crucial in the prevention of stroke. Exercising promotes good strong muscles, bone density, burn calories, and improves reflexes and balance (Croft, 2015).

Conclusion

This study interrogated the use of strategic communication as a tool for stemming the rising incidence of stroke and hypertension in Nigeria. Literature evidence indicates that community-based media have credibility, better and more effective access, and are more effective than the conventional media of mass communication, and therefore, could prove beneficial when employed for the promotion of wellness and cardiovascular health in the rural areas of Nigeria.

Recommendations

The following recommendations are put forward for purposes of policy making and implementation with regards to the subject of this study:

- (a) Establishment of Acute Stroke Units in all the state government-owned hospitals across 774 Local Government Areas of Nigeria is crucial to prevent and minimize the growing cases of

- stroke. Exercising is extremely crucial in the prevention of stroke. Exercising promotes good strong muscles, bone density, burn calories, and improves reflexes and balance.
- (b) Public health campaigns targeted at youths should aim to promote cardiovascular health and wellness. It is essential for the health care providers to enlighten the young adults at early stage to promote cardiovascular wellness among young adults in Nigeria.
 - (c) Early arrival of stroke patients to stroke centres or hospitals for immediate medical attention should be widely emphasized through public education and strategic communication process in the media.
 - (d) Face, Arm, Speech and Time (FAST) awareness, knowledge and literacy should be initiated and maintained by the Federal Ministry of Health and Ministries of Health across states to promote availability of information in the public space about signs of stroke and immediate medical response in Nigeria.
 - (e) Traditional methods of education, information and enlightenment campaigns have proven to be more effective than conventional media of mass communication, especially for those who live in the rural areas of Nigeria. Therefore, house-to-house campaigns, traditional newspersons, village square meetings and itinerant information vans should be deployed as a means of rural and urban education, information and enlightenment of the people with regard to early symptoms and detection and prevention of stroke attacks.
 - (f) Although, television has been identified as a major source of information for stroke-related messages, young adults also prefer sourcing information on social media and internet, especially those who live in the urban centres. Consequently, campaigns and sensitization messages should make use of social media and internet to reach the young adults.
 - (g) Community-based organisations and ethno-communication media are more effective for sensitizing and educating young adults, especially those who reside in the remotest parts of the rural areas of Nigeria.

References

- Abrams, H. B., & Callahan, C. (2022). Health Behavior and Motivational Engagement Models Can Explain and Modify Teleaudiology Uptake. *American Journal of Audiology*, 31(3S). https://doi.org/10.1044/2022_AJA-21-00204
- Alberts, M. J. (2012). Improving public education about stroke. *Annals of the New York Academy of Sciences*, 1268(1). <https://doi.org/10.1111/j.1749-6632.2012.06722.x>
- Alkali, N. H., Bwala, S. A., Dunga, J. A., Watila, M. M., Jibrin, Y. B., & Tahir, A. (2016). Prestroke treatment of stroke risk factors: A cross-sectional survey in central Nigeria. *Annals of African Medicine*, 15(3). <https://doi.org/10.4103/1596-3519.188891>
- Anjajo, E. A., Workie, S. B., Tema, Z. G., Woldegeorgis, B. Z., & Bogino, E. A. (2023). Determinants of hypertension among diabetic patients in southern Ethiopia: a case control study. *BMC Cardiovascular Disorders*, 23(1). <https://doi.org/10.1186/s12872-023-03245-4>
- Barakat, M., A. AlSalamat, H., Jirjees, F., Al-Obaidi, H., k. Hussain, Z., El Hadidi, S., Mansour, S., Malaeb, D., & Hosseini, H. (2022). Factors Associated with Knowledge and Awareness of Stroke Among the Jordanian Population: A Cross-Sectional Study. *F1000Research*, 10. <https://doi.org/10.12688/f1000research.74492.2>

- Beauchamp, R., Yam, C., & Shiell, S. (2017). Don't trust your taste buds - an evidence-based social media campaign to raise awareness of high salt consumption. *Journal of Nutrition & Intermediary Metabolism*, 8. <https://doi.org/10.1016/j.jnim.2017.04.032>
- Bogousslavsky, J., Brott, T., Diener, H. C., Fieschi, C., Hacke, W., Kaste, M., Orgogozo, J. M., & Wahlgren, N. G. (1996). European strategies for early intervention in stroke. A report of an Ad Hoc Consensus Group meeting. In *Cerebrovascular Diseases* (Vol. 6, Issue 5). <https://doi.org/10.1159/000108045>
- Boima, V., Yorke, E., Ganu, V., Gyaban-Mensah, A., Ekem-Ferguson, G., Kretchy, I. A., & Mate Kole, C. C. (2023). Coping strategies and resilience among patients with hypertension in Ghana. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1038346>
- Bray, J., Mosley, I., Johnson, R., Trobbiani, K., Cadilhac, D., Lalor, E., Sison, J., & Bolam, B. (2011). Trends in stroke symptom knowledge in Australia following commencement of national awareness campaigns. *International Journal of Stroke*, 6.
- Brehmer-Rinderer, B., Zigrovic, L., & Weber, G. (2014). Evaluating a health behaviour model for persons with and without an intellectual disability. *Journal of Intellectual Disability Research*, 58(6). <https://doi.org/10.1111/jir.12046>
- Cheah, Y. K., Lim, K. K., Ismail, H., Mohd Yusoff, M. F., & Kee, C. C. (2023). Can the association between hypertension and physical activity be moderated by age? *Journal of Taibah University Medical Sciences*, 18(4). <https://doi.org/10.1016/j.jtumed.2022.12.016>
- Cook, M., Sather, J. A., Drofa, A., Meyer, C., & Pietrzak, J. (2021). Abstract P688: North Dakota Mission: Lifeline Stroke Public Awareness Survey Campaign Results Indicate Significant Improvements. *Stroke*, 52(Suppl_1). https://doi.org/10.1161/str.52.suppl_1.p688
- Corea, F., Budincevic, H., De Marchis, G. M., Nasr, N., Rutovic, S., & Zedde, M. (2020). Outlining Stroke Infodemiology. *Telemedicine and E-Health*, 26(4). <https://doi.org/10.1089/tmj.2019.0088>
- Croft, S. (2015). How to go to the gym without pushing things out! *BJOG: An International Journal of Obstetrics and Gynaecology*, 122(18).
- de Moraes Pinto, R., de Medeiros Valentim, R. A., Fernandes da Silva, L., Góis Farias de Moura Santos Lima, T., Kumar, V., Pereira de Oliveira, C. A., Martins Gomes de Gusmão, C., de Paiva, J. C., & de Andrade, I. (2021). Analyzing the reach of public health campaigns based on multidimensional aspects: the case of the syphilis epidemic in Brazil. *BMC Public Health*, 21(1). <https://doi.org/10.1186/s12889-021-11588-w>
- Falkner, B., Gidding, S. S., Baker-Smith, C. M., Brady, T. M., Flynn, J. T., Malle, L. M., South, A. M., Tran, A. H., & Urbina, E. M. (2023). Pediatric Primary Hypertension: An Underrecognized Condition: A Scientific Statement from the American Heart Association. *Hypertension*, 80(6). <https://doi.org/10.1161/HYP.0000000000000228>
- Farhoudi, M., & Sharifipour, E. (2022). Iranian stroke model-how to involve health policymakers. *Pakistan Journal of Neurological Sciences*, 17(02). <https://doi.org/10.56310/pjns.v17i02.178>
- Folyovich, A., Biczó, D., Béres-Molnár, K. A., & Toldi, G. (2018). Assessment of the Efficiency of Stroke Awareness Campaigns in Hungary. *Journal of Stroke and Cerebrovascular Diseases*, 27(7). <https://doi.org/10.1016/j.jstrokecerebrovasdis.2018.02.006>
- Flynn, D., Ford, G. A., Rodgers, H., Price, C., Steen, N., & Thomson, R. G. (2014). A time series evaluation of the FAST national stroke awareness campaign in England. *PLoS ONE*, 9(8). <https://doi.org/10.1371/journal.pone.0104289>

- Frederic, M., Ozguler, A., Loeb, T., & Baer, M. (2013). Abstract 218: Do mass media campaigns about stroke influence the number of calls to Emergency Medical Services Dispatch Center? *Circulation: Cardiovascular Quality and Outcomes*, 6(suppl_1). https://doi.org/10.1161/circoutcomes.6.suppl_1.a218
- Galson, S. W., Pesambili, M., Vissoci, J. R. N., Manavalan, P., Hertz, J. T., Temu, G., Staton, C. A., & Stanifer, J. W. (2023). Hypertension in an Emergency Department Population in Moshi, Tanzania: A Qualitative Study of Barriers to Hypertension Control. *PLoS ONE*, 18(1 January). <https://doi.org/10.1371/journal.pone.0279377>
- Han, J. M., & Jang, B. H. (2021). Educational interventions for promoting stroke literacy in the general public. *Cochrane Database of Systematic Reviews*, 2021(9). <https://doi.org/10.1002/14651858.CD014640>
- Hanrahan, J. P., Sherman, C. B., Bresnitz, E. A., Emmons, K. M., & Mannino, D. M. (1996). Cigarette smoking and health. In *American Journal of Respiratory and Critical Care Medicine* (Vol. 153, Issue 2). <https://doi.org/10.1164/ajrccm.153.2.8564146>
- Hodgson, C., Lindsay, P., & Rubini, F. (2009). Using paid mass media to teach the warning signs of stroke: The long and the short of it. *Health Promotion Journal of Australia*, 20(1). <https://doi.org/10.1071/he09058>
- Jang, S., Kim, S. T., Kim, Y. K., & Song, Y. H. (2023). Association of blood pressure and hypertension between parents and offspring: The Korea National Health and Nutrition Examination Survey. *Hypertension Research*, 46(2). <https://doi.org/10.1038/s41440-022-01089-7>
- Jeong, J.-O. (2013). Regional Cardiocerebrovascular Center Project in the Treatment of Acute Myocardial Infarction. *Korean Journal of Medicine*, 85(3). <https://doi.org/10.3904/kjm.2013.85.3.272>
- Konlan, K. D., & Shin, J. (2023). Determinants of Self-Care and Home-Based Management of Hypertension: An Integrative Review. *Global Heart*, 18(1). <https://doi.org/10.5334/gh.1190>
- Koya, S. F., Pilakkadavath, Z., Chandran, P., Wilson, T., Kuriakose, S., Akbar, S. K., & Ali, A. (2023). Hypertension control rate in India: systematic review and meta-analysis of population-level non-interventional studies, 2001–2022. *The Lancet Regional Health Southeast Asia*, 9. <https://doi.org/10.1016/j.lansea.2022.100113>
- Kundu, S., Rahman, M. A., Kabir, H., Al Banna, M. H., Hagan, J. E., Srem-Sai, M., & Wang, L. (2023). Diabetes, Hypertension, and Comorbidity among Bangladeshi Adults: Associated Factors and Socio-Economic Inequalities. *Journal of Cardiovascular Development and Disease*, 10(1). <https://doi.org/10.3390/jcdd10010007>
- Mazza, A., Lenti, S., Ramazzina, E., Schiavon, L., & Gussoni, G. (2016). Homocysteine lowering therapy in hypertensive subjects at low cardiovascular risk: role of nutraceuticals. *Italian Journal of Medicine*, 10 CC-.
- Hodgson, C., Lindsay, P., & Rubini, F. (2007). Can mass media influence emergency department visits for stroke? *Stroke*, 38(7). <https://doi.org/10.1161/STROKEAHA.107.484071>
- Hundt, B., & Chen, K. (2017). Abstract WP377: Stroke Awareness in the Age of Social Media. *Stroke*, 48(suppl_1). https://doi.org/10.1161/str.48.suppl_1.wp377
- Inam, M., Sanzgiri, A., Lekka, E., Sheth, S., Barreto, A., Savitz, S., Arttime, C., Pedroza, C., Engstrom, A., Sheriff, F., Ambrocik, A., & Chen, P. (2021). Exception from informed consent in the era of social media: The SEGA stroke trial experience. *Brain Circulation*, 7(4). https://doi.org/10.4103/bc.bc_44_21

- Khalil, H. M., & Lahoud, N. (2020). Knowledge of Stroke Warning Signs, Risk Factors, and Response to Stroke among Lebanese Older Adults in Beirut. *Journal of Stroke and Cerebrovascular Diseases*, 29(5). <https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.104716>
- Kumar, S., Nazia, S., Almani, S. A., Lakhair, M., Shah, M. I., & Suhail, Z. (2017). Prevalence of primary headache in association with age, sex, obesity and hypertension among patients received at OPD of Liaquat university hospital, Hyderabad/Jamshoro. *Journal of the Liaquat University of Medical and Health Sciences*, 16(2). <https://doi.org/10.22442/jlumhs.171620515>
- Moloney, L. (2021). “Awareness, Protection, Detection” Atrial Fibrillation Awareness Campaign, Heart Foundation 2019 and 2020. *Heart, Lung and Circulation*, 30. <https://doi.org/10.1016/j.hlc.2021.05.055>
- Kayode-Iyasere, E., & Odiase, F. (2019). Awareness of stroke, its warning signs, and risk factors in the community: A study from the urban population of Benin City, Nigeria. *Sahel Medical Journal*, 22(3). https://doi.org/10.4103/smj.smj_4_18
- Klassen, A. C., Sood, S., Summers, A., Perera, U., Shuster, M., Lopez, J. P., McCord, A., Stokes, J., White, J., & Wagner, A. (2021). From Salt to Stroke—Evaluation of a Media Campaign for Sodium Reduction in Philadelphia. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.619261>
- Komolafe, M. A., Obembe, A. O., Olaogun, M. O., Adebisi, A. M., Ugalahi, T., Dada, O., Kanu, A., Adebisi, O. C., Akilo, F., Ogunkoya, B., & Fawale, B. (2015). Awareness of stroke risk factors and warning signs in nigerian adolescents compared with adults. *Journal of Stroke and Cerebrovascular Diseases*, 24(3). <https://doi.org/10.1016/j.jstrokecerebrovasdis.2014.11.013>
- Leighton-Herrmann, E., Margaret, P., & Williams, O. (2016). Community stroke education strategies in low-income urban communities: Challenges of a mail-based stroke awareness intervention. *International Journal of Stroke*, 11(3), 43-51.
- Lockhart, J., Knapp, M., & Kimball, M. (2022). P119 Mass Media as a Means of Engagement and Reach during Alcohol Free for 40 (AFF40). *Journal of Nutrition Education and Behavior*, 54(7). <https://doi.org/10.1016/j.jneb.2022.04.160>
- Lin, W., Yin, W., & Yuan, D. (2022). Factors associated with the utilization of community-based health services among older adults in China—an empirical study based on Anderson’s health behavior model. *BMC Primary Care*, 23(1). <https://doi.org/10.1186/s12875-022-01697-9>
- Liu, J., Goel, S., Brown, C. A., DeFerranti, S., Stamoulis, C., & Gooding, H. (2020). 137. Transforming Cardiovascular Disease Risk to Cardiovascular Health: Opportunities to Educate Young Women About CVD. *Journal of Adolescent Health*, 66(2). <https://doi.org/10.1016/j.jadohealth.2019.11.140>
- Malhotra, K., Kumar, A., Lal, V., Wander, G. S., Majmundar, M., & Kalra, A. (2023). Similar Events but Contrasting Impact: Appraising the Global Digital Reach of World Heart Day and Atrial Fibrillation Awareness Month. *Global Heart*, 18(1). <https://doi.org/10.5334/gh.1212>
- Mellon, L., Hickey, A., Doyle, F., Dolan, E., & Williams, D. (2014). Can a media campaign change health service use in a population with stroke symptoms? Examination of the first Irish stroke awareness campaign. *Emergency Medicine Journal*, 31(7). <https://doi.org/10.1136/emmermed-2012-202280>

- Mekonene, M., Baye, K., & Gebremedhin, S. (2023). Epidemiology of hypertension among adults in Addis Ababa, Ethiopia. *Preventive Medicine Reports*, 32. <https://doi.org/10.1016/j.pmedr.2023.102159>
- Naftchi, A., Naftchi, A., Thaker, A., Singh, J., Feldstein, E., Dominguez, J., & Al-Mufti, F. (2021). Abstract 1122-000134: Social and Cultural Barriers to Global Stroke Care. *Stroke: Vascular and Interventional Neurology*, 1(1), 6-22. https://doi.org/10.1161/svin.01.suppl_1.000134
- NCT (2011). Effect of Intervention to Improve Stroke Recognition. <https://Clinicaltrials.Gov/Show/NCT01497886>.
- Nishijima, H., Kon, T., Ueno, T., Haga, R., Yamazaki, K., Yagihashi, K., Funamizu, Y., Arai, A., Suzuki, C., Nunomura, J. ichi, Baba, M., & Tomiyama, M. (2016). Effect of educational television commercial on pre-hospital delay in patients with ischemic stroke. *Neurological Sciences*, 37(1). <https://doi.org/10.1007/s10072-015-2372-1>
- Nuraini, B. (2015). Risk Factors of Hypertension. *Journal of Majority*, 4(5).
- Paiva, J. C. de L., Dias-Trindade, S., Gonzalez, M. O. A., Barros, D. M. da S., Cardoso, P. H., Bezerra, P. H. C., Lima, T. G. F. de M. S., Lacerda, J. de S., Muneiro, L. C., Cunha Oliveira, A., Camarheiro, A. P., Barbalho, I. M. P., & Valentim, R. A. de M. (2022). Analysis of the Impact of Communication Campaigns under the Project “Syphilis No”: A National Tool for Inducing and Promoting Health. *International Journal of Environmental Research and Public Health*, 19(23). <https://doi.org/10.3390/ijerph192315884>
- Qakisa, M. (2022). Theories, models and strategies in developing an effective HIV/AIDS campaign in South Africa. *Communicare: Journal for Communication Studies in Africa*, 22(2). <https://doi.org/10.36615/jcsa.v22i2.1794>
- Rachmat, O., Setyadi, S., & Kustanto, A. (2022). Sociodemographic factors, environmental, community mobility and health indicators associated with the spread of COVID-19 and case fatality rate in Indonesia: an ecological study. *Journal of Public Health and Development*, 20(2). <https://doi.org/10.55131/jphd/2022/200202>
- Rasura, M., Baldereschi, M., Di Carlo, A., Di Lisi, F., Patella, R., Piccardi, B., Polizzi, B., & Inzitari, D. (2014). Effectiveness of public stroke educational interventions: A review. *European Journal of Neurology*, 21(1). <https://doi.org/10.1111/ene.12266>
- Redding, C. a, Rossi, J. S., Rossi, S. R., Velicer, W. F., & Prochaska, J. O. (2000). Health Behavior Models. *The International Electronic Journal of Health Education*, 3(2).
- Roubsanthisuk, W., Kunanon, S., Chattranukulchai, P., Panchavinnin, P., Wongpraparut, N., Chaipromprasit, J., Pienvichitr, P., Ayudhya, R. K. N., & Sukonthasarn, A. (2023). 2022 Renal denervation therapy for the treatment of hypertension: a statement from the Thai Hypertension Society. *Hypertension Research*, 46(4). <https://doi.org/10.1038/s41440-022-01133-6>
- Rubinstein, A., Colantonio, L., Bardach, A., Caporale, J., Garcia Marti, S., Gibbons, L., Kopitowski, K., Alcaraz, A., Augustovski, F., & Pichon-Riviere, A. (2009). CS9 Estimation of the Burden of Cardiovascular Disease Attributable to Modifiable Risk Factors and Cost-Effectiveness Analysis of Preventive Interventions to Reduce this Burden in Argentina. *Value in Health*, 12(7). [https://doi.org/10.1016/s1098-3015\(10\)75302-x](https://doi.org/10.1016/s1098-3015(10)75302-x)

- Silver, F. L., Rubini, F., Black, D., & Hodgson, C. S. (2003). Advertising strategies to increase public knowledge of the warning signs of stroke. *Stroke*, 34(8). <https://doi.org/10.1161/01.STR.0000083175.01126.62>
- Solomon, M., Shiferaw, B. Z., Tarekegn, T. T., GebreEyesus, F. A., Mengist, S. T., Mammo, M., Mewahegn, A. A., Mengiste, B. T., & Terefe, T. F. (2023). Prevalence and Associated Factors of Hypertension among adults in Gurage Zone, Southwest Ethiopia, 2022. *SAGE Open Nursing*, 9(4). <https://doi.org/10.1177/23779608231153473>
- Szybinski, Z., Jarosz, M., Hubalewska-Dydejczyk, A., Stolarz-Skrzypek, K., Kawecka-Jaszcz, K., Traczyk, I., & Stos, K. (2010). Profilaktyka jodowa a ograniczenie spożycia soli wyzwanie XXI wieku. *Endokrynologia Polska*, 61(11)
- Susanto, T., Rasny, H., Kurdi, F., Yunanto, R. A., & Rahmawati, I. (2023). Management of Hypertension Using a Plant-Based Diet among Farmers: Protocol for a Mixed Methods Study. *JMIR Research Protocols*, 12. <https://doi.org/10.2196/41146>
- Tiscornia, M. V., Allemandi, L., & Schoj, V. (2013). Mapping of civil society organizations in Latin America and the Caribbean. *Annals of Nutrition and Metabolism*, 63(9).
- Trobbiani, K., Freeman, K., Arango, M., Lalor, E., Jenkinson, D., & Thrift, A. G. (2013). Comparison of stroke warning sign campaigns in Australia, England, and Canada. *International Journal of Stroke*, 8(100 A). <https://doi.org/10.1111/j.1747-4949.2012.00917.x>
- Urbánková, Š., Neumann, J., & Potmešilová, H. (2013). Cévní mozková příhoda a role médií v informovanosti veřejnosti. *Hygiena*, 58(4), 114-122.
- Vairale, J., Dalal, P. M., Bhattacharjee, M., & Gawali, K. (2015). Mumbai stroke registry: Long term follow up of 456 first ever stroke cases in a population based study. *International Journal of Stroke*, 10(3).
- Wada, K., Terasaki, T., Namitome, S., Nagao, Y., Shindo, S., & Ando, Y. (2017). Abstract WP200: Temporal Trends in Public Awareness of the Reperfusion Therapy in Acute Ischemic Stroke Patients in Japan. *Stroke*, 48(suppl_1). https://doi.org/10.1161/str.48.suppl_1.wp200
- Wolters, F. J., Paul, N. L., Chandratheva, A., Li, L., & Rothwell, P. M. (2013). Contrasting Impact of Fast-Test Public Education on Behaviour after Tia and Minor Stroke Versus Major Stroke: A Population-Based Study. *Journal of Neurology, Neurosurgery & Psychiatry*, 84(11). <https://doi.org/10.1136/jnnp-2013-306573.4>
- Wray, R. J., Jupka, K., & Ludwig-Bell, C. (2005). A community-wide media campaign to promote walking in a Missouri town. *Preventing Chronic Disease*, 2(4), 54-69.
- Wu, J., Han, X., Sun, D., Zhang, J., Li, J., Qin, G., Deng, W., Yu, Y., & Xu, H. (2023). Age specific association of stage of hypertension at diagnosis with cardiovascular and all causes mortality among elderly patients with hypertension: a cohort study. *BMC Cardiovascular Disorders*, 23(1). <https://doi.org/10.1186/s12872-023-03250-7>
- Yanuar, F., Uttaqi, F. N., Zetra, A., Rahmi, I., & Devianto, D. (2022). The Comparison of WLS and DWLS Estimation Methods in SEM to Construct Health Behavior Model. *Science and Technology Indonesia*, 7(2). <https://doi.org/10.26554/sti.2022.7.2.164-169>
- Zhang, S., Xu, M., Liu, Z.-J., Feng, J., & Ma, Y. (2020). Neuropsychiatric issues after stroke: Clinical significance and therapeutic implications. *World Journal of Psychiatry*, 10(6). <https://doi.org/10.5498/wjp.v10.i6.125>