



The Place of Spiritual and Traditional Beliefs in Stroke Rehabilitation in Sub-Saharan Africa: A Scoping Review

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Authors' contributions

This work was carried out in collaboration between both authors. The study protocol was designed by authors MCN and ECK. Literature searches were undertaken by author MCN. Screening was done by the authors MCN and ECK. However author MCN conducted the eligibility and wrote the results and discussion sections of the review. Both authors read and approved the final manuscript.

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Review Article

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ABSTRACT

Aims: This systematic scoping review aimed at mapping evidence available on the impact of spiritual and traditional beliefs on perception of stroke vis-a-vis stroke rehabilitation in sub-Saharan Africa.

Study Design: Systematic scoping review.

Place and Duration of Study: This study was conducted in June, 2019 as a preliminary step to study underway in the University of Nigeria Enugu Campus.

Methodology: Literature search was undertaken of PubMed, CINAHL, EBSCOhost Academic Search Complete and PsycINFO. The selection process was aided with use of EndNote X8. A total of 17 peer-reviewed articles were included. Thematic contents analysis was done using NVIVO 12. Five emerging themes were synthesized. Results show that a small but significant number of the respondents possessed poor knowledge and perception of stroke, and this affected the health seeking behaviors.

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Results: Although many of the participants would seek formal healthcare when a stroke occurs, some believed stroke is purely a spiritual event and should be addressed spiritually, while a few advocated for integration of traditional and orthodox healthcare approaches. Being a clinical worker, educated or a Christian was associated with good knowledge of stroke. For the participants who preferred spiritual or traditional approach to formal healthcare, traditional or religious inclination, level of education, hospital cost and hospital-related ill-treatment are the propelling factors.

Conclusion: Spiritual and traditional beliefs possess a significant place in stroke rehabilitation in sub-Saharan Africa. We commend that holistic approach with a spiritual component be adopted in stroke rehabilitation across sub-Saharan Africa.

Keywords: Stroke; rehabilitation; belief; perspective; spirituality; religion; tradition; culture.

1. INTRODUCTION

Stroke is the commonest cause of permanent disability and death globally [1]. There is a decline in stroke incidence in developed nations; however, the developing nations of the world are experiencing a tremendous rise in stroke incidence [2]. The cumulative incidence of 218 in men and 127 in women per 100,000 among Catalonians is one of the lowest in developed countries [3]. In African, stroke accounts for about 4% of inpatient admissions, 4.5% of total death and it is arguably the most prevalent neurological disease [4]. Stroke mortality and disability were rated highest in Angola, Liberia, and Sierraleone all in sub-Saharan Africa in 2002 [5]. In Nigeria, incidence of stroke has been estimated as 116 per 100,000 per year [6]. Recently, stroke mortality rate in Nigeria is rated as high as 21%-45% and most survivors die at the acute phase [7]. It is even believed that the prevalence and stroke mortality rate is under reported in sub-Saharan Africa context as there are a few community-based studies on stroke, with many relying on hospital based data [8]. Only about one third of stroke patient may visit hospital due to several reasons bordering on ignorance of stroke, religious and cultural undertones [9] thus underscoring the necessity of educational approach to stroke rehabilitation.

Despite the advances in stroke prevention and rehabilitation, stroke remains the third leading cause of death and the major cause of long-term disability in adults [10]. There is need for paradigm shift in the approach adopted for stroke management [11] especially in sub-Saharan context where most disabled stroke survivors live. Stroke education must form an essential pivot in strategies targeted towards effective stroke rehabilitation [12]. Stroke education

involves education of the community about stroke, its risk factor [11], and the necessity of timely interventions. However, the failure of reduction in both the incidence of stroke and its physical and social consequences in sub-Saharan Africa speaks much into the ineffectiveness or paucity of stroke education which poses challenge to stroke rehabilitation in the region [12]. While such challenge may not be entirely dissociated from poor perceptions of stroke as held by stroke survivors and caregivers, ignorance of the impact of spiritual and traditional beliefs on the part of healthcare professional may play a significant role. There is no doubt that stroke education is essential to win the fight against stroke, however, the place of spiritual and traditional beliefs must of a necessity be put into consideration so as to ensure successful persuasion of the people against their ill-health seeking behaviors and poor perceptions towards stroke, which are often precipitated by religio-traditional inclinations and idiosyncrasies. Understanding of the people's perspective to stroke may be crucial tool to successful stroke education in sub-Saharan Africa.

Traditional and spiritual beliefs are said to play important role in definition of health or ill-health, acceptance health condition and choice of route to care and care outcome especially in Africa. Culture has been defined as the integrated patterns of human behavior that include the language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, spiritual, or social groups [13]. It modifies people's experiences and reactions [14], and shapes understanding of health, symptoms, attitudes towards disability and treatment options [15]. Traditional belief defines people's identity, interaction and behavior in certain situations such as ill-health. There is no

doubt traditional belief affects people's perception of the causes disease and influence their health seeking behavior [16]. Regarding stroke, it is often misinterpreted or confused with other condition [17] both in western world and in typical African society. In the western world, stroke is often seen as disease of heart which usually strikes elderly, and cannot be treated or prevented [18]. However, in sub-Saharan Africa, local beliefs and understanding of stroke are poor and differ from remarkably from one African society to another [19]. For example, stroke is believed to be result of attack evoked by supernatural powers of demons and witchcraft [20]. Several instances of where patients' relative opted discharge against medical advice to visit the traditional stroke rehabilitation homes abounds in the sub-Saharan African region [21]. Interestingly, the perception of stroke may differ from one African culture to another thus underscoring the necessity of a scoping review on the subject matter. This systematic scoping review aims at mapping evidence available on how spiritual and traditional beliefs shape perspectives to stroke vis-à-vis stroke rehabilitation in sub-Saharan Africa.

2. METHODOLOGY

2.1 Study Design

This is a scoping review of peer-reviewed on the "place of traditional and spiritual belief in sub-Saharan Africa" This review was conducted following the steps prescribed in the scoping review framework devised by Arksey and O Malley [22].

2.2 Research Question

What is the place for spiritual and traditional belief in stroke rehabilitation in Sub-Saharan Africa?

Sub-research questions

1. Do spiritual and traditional beliefs affect knowledge of stroke in sub-Saharan African?
2. Do spiritual and traditional beliefs shape perspective of etiology of stroke in sub-Saharan African?
3. Do spiritual and traditional beliefs affect choice of healthcare setting for rehabilitation of stroke in sub-Saharan African?

2.3 Eligibility Criteria

This JBI' Participants Concept Context (PCC) model [23] guided the conduct of the review. Participants: Stroke survivors, caregivers, traditional healers, health workers and other apparently healthy individuals groups.

Concept: Spiritual belief, religious belief, traditional or cultural perspective, stroke rehabilitation

Context: This systematic scoping review was limited articles speaking into to stroke rehabilitation in sub-Saharan Africa.

2.4 Identifying Relevant Studies

This scoping review included research studies of sub-Saharan Africa context published between 2005 and June, 2019, irrespective of the methodological approach. An initial search was undertaken to harvest keywords and MeSH terms from key articles. Following the initial search, analysis of keyword and index terms used to describe the articles was carryout. A PubMed pilot search was conducted using these terms. We refined the search terms to obtain the most sensitive and specific terms (Appendix). A third search using the piloted term was undertaken using PubMed, CINAHL, EBSCOhost Academic Search Complete and PsycINFO (Appendix). Furthermore, the reference lists of all identified reports and articles were searched for additional studies.

2.5 Study Selection

The following selection criteria were set to ensure that specific ideas relating to the research question were included in the selected studies:

Inclusion criteria

- Studies reporting evidence on spiritual or/and traditional aspects to stroke rehabilitations
- Studies must be conducted in the sub-Saharan Africa region
- Articles must be written in English language.

Exclusion criteria

- Opinion papers on spiritual and traditional aspects to stroke rehabilitation

- Commentaries on traditional and spiritual belief among stroke survivors.
- Articles which full text were not available during the period of the review

2.6 Selection Process and Data Management

The results of literature were exported into EndNote X8, to check for duplication of studies, and later to NVIVO 12 for further confirmation of duplication and analysis. Duplicates were removed accordingly. The remaining studies were subjected to initial screening by the reviewer authors 1 and 2, and a total of 17 articles were found to be relevant to the research question. No study author was contacted as full texts of the included were accessible. The selection process from screening through inclusion is captured using PRISMA chart (Fig. 1) [24].

2.7 Charting of Data

Data charting tool (Table 1) above containing information relevant the research question was developed and piloted. The following key information was charted: authors, year of publication, sample size, study design, methodological strategy and key findings that relate to the scoping review questions.

2.8 Collating, Summarizing and Reporting of Result

The study provided a narrative account of data extracted from the included studies using thematic content analysis. Thematic content analysis was aided with use of NVIVO 12. The emerging themes were collated, summarized and presented in results. The themes include perspectives into knowledge of stroke, etiology of stroke, response to a stroke, preferred treatment setting and determinant of choice of healthcare setting.

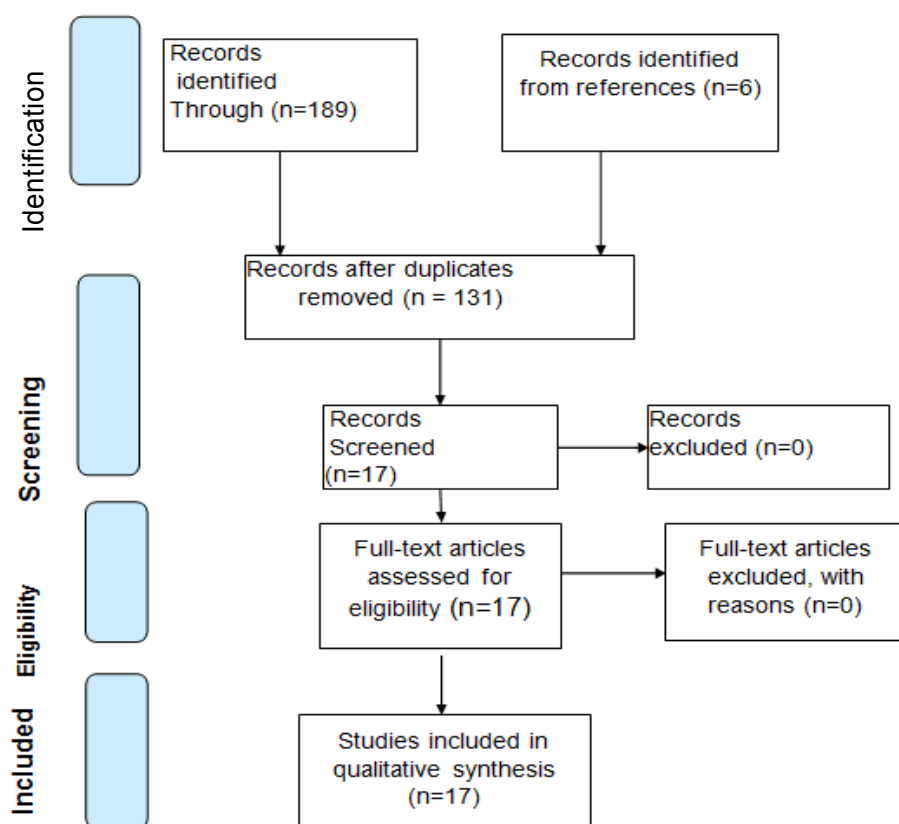


Fig. 1. PRISMA flow diagram

Table 1. Impact of spiritual and traditional beliefs on perception of stroke vis-à-vis stroke rehabilitation in sub-Saharan Africa

Author(s) and year	Title	Country	Population	Study design	Sample size	Outcome /measures	Key findings
Urimubenshi et al. [25]	Stroke care in Africa: A systematic review of the literature	Sub-Saharan Africa	Stroke patients	Systematic review	38	Frequency of responses	Regarding response to stroke, between 1% and 13%, identified seeking spiritual intervention as the first option.
Akinyemi et al. [19]	Knowledge and perception of stroke amongst hospital workers in an African community	Southwestern Nigeria	Hospital workers	Cross-sectional survey	370	29-item, structured, semi-closed questionnaire	About 14% of subjects attributed stroke risk to evil spirits/witchcraft. Forty 48 (13%) and 10 (2.7%) respondents preferred spiritual healing and herbal preparation respectively. The choice of spiritual healing was associated with being a non-clinical worker or Christian.
Bham and Ross, [26]	Traditional and western medicine: cultural beliefs and practices of South African Indian Muslims with regard to stroke	South Africa	Caregivers and Traditional healers	case study	20	A Semi-structure interview schedule	Regarding aetiology of stroke, 45% believed stroke to be the will of God as against 25% who regarded hypertension as the cause of stroke. Eight of the held that stroke is a result of imbalance between hot and cold created by energy depletion. Other causes include tension and stress, curses and evil spirits.
Donkor et al. [27]	Community awareness of stroke in Accra, Ghana	Ghana	Community dwellers	693 (63 household)	Cross-sectional	A structured questionnaire	The beliefs that stroke affects only the elderly and stroke is a spiritual illness caused by evil spirits or witches were shared by 26% and 25% of the respondents respectively. Christian religion was a predictors of stroke awareness
Donkor et al. [28]	Profile and health-related quality of life of Ghanaian stroke survivors	Ghana	Stroke survivors	156 stroke survivors and 156 age- and sex-matched, apparently healthy controls.	Cross-sectional	HRQoL, stroke severity and risk factors	In this study, shorter stroke duration was associated with better spirit HRQoL of stroke survivors.
Ejike, [29]	This stroke was sent...': Stroke-related illness concepts and attendant health-seeking behaviors of educated Nigerians	Nigeria	Apparently healthy respondents	960	Cross-sectional survey	A stroke concept questionnaire	Twenty one percent of the population (and 36% of those who have had a stroke) believed spiritual events cause strokes; while 10% and 16% of the respondents (and 7% and 20% of those who have had a stroke) believed a prayer house and traditional healing home, respectively, were the best places to manage stroke cases.
Gbiri et al. [30]	Associations between knowledge and belief	Southwestern Nigeria	Stroke survivors	150	Cross-sectional	A interview administered	Twenty two, 5 and 5 regarded stroke to be result of stress, hereditary and spiritual attack respectively. At

Author(s) and year	Title	Country	Population	Study design	Sample size	Outcome /measures	Key findings
	of stroke and pathways to healthcare adopted by Nigerian stroke survivors					questionnaire	stroke onset, 5(3.5%) went to patent medicine stores for treatment while 27 and 111 went to traditional/religious healers and orthodox hospitals respectively. Choice of healthcare was significant association) each of knowledge and belief.
Obembe et al. [31]	Awareness of Risk Factors and Warning Signs of Stroke in a Nigeria University	Southwestern Nigeria	University students	994 (500 students and 494 staff)	Cross-sectional survey	Awareness of stroke risk factors and warning signs structured questionnaire	When asked which action to take when a stroke occurs near a total of 32 (3.2%) respondents (25 students, and 7 staff indicated they would seek spiritual attention
Hamzat and Arulogun, [32]	Family Caregivers of Nigerian-African Stroke Survivors: Their Knowledge and Beliefs about Stroke	Southwestern Nigeria	Caregivers to stroke survivors	83	Cross-sectional Survey	39-item questionnaire	First place of seeking care after the onset of stroke were hospitals (81.9%) and traditional medical practitioners (16.9%). Regarding belief of stroke 156 regarded stroke is caused by witches, wicked people. Most respondents (291) preferred a combination of prayer and medical approaches to stroke management, 165 responses favored combination of traditional and medical approaches
Mustapha, (2017) [33]	Contributing to a Better Understanding and Management of Stroke in Nigeria: the Burden, the Challenges, Resources and Opportunities	Nigeria	Stroke survivors	Systematic review	50	The major outcomes of interest was captured with use of frequency and percents	The disease is still enrobed in superstition and myths in Nigeria as a result of the influence of cultural beliefs, tradition and religion.
Sanuade, [34]	Community perceptions on the role of sexual activity on stroke: a qualitative study exploring the views of Ghanaian local community residents	Ghana	Community dwelling adults	255	Cross sectional study	Interview and focus group discussion	The narratives of the participants showed that the ways through which sex is believed to trigger a stroke include frequency of sexual activity, sex positions (standing), having sex when older and engaging in indiscriminate sex as against the trado-religious culture
Agyemang et al. [35]	Stroke in 6shanti region of Ghana	Ghana	Stroke survivors	1054	Retrospective study	Hospital case notes	Stroke as a chronic disease is commonly considered as a spiritual illness, which requires spiritual

Author(s) and year	Title	Country	Population	Study design	Sample size	Outcome /measures	Key findings
							intervention rather than treatment in a hospital and therefore could be underreported.
Owolabi, [36]	Consistent determinants of post-stroke health-related quality of life across diverse cultures: Berlin–Ibadan study	Nigeria Germany	Stroke survivors	Nigeria (n =100) and Germany (n = 103)	Retrospective study	National Institute of Health Stroke Scale, stroke levity score, modified Rankin Scale and HRQOL	religious beliefs play pivotal role in re-establishment of continuity of self, self-rediscovery and self-rejuvenation after stroke
Owolabi, [37]	Impact of stroke on health-related quality of life in diverse cultures: the Berlin-Ibadan multicenter international study	Nigeria Germany	Stroke Survivors And apparently healthy adults (AHA)	100 stroke patients 100 AHA in Nigeria 103 stroke and 50 AHAs in Germany	Retrospective survey	National Institute of Health Stroke Scale, stroke levity score, modified Rankin Scale and HRQOL	In this study, the spiritual of HRQOL was preserved. Due to pivotal role of the spiritual sphere in rehabilitation, and its high importance rating by stroke patients, more research resources are needed for the development of therapeutic techniques aimed at exploiting this stroke-resistant sphere of HRQOL.
Makganye et al. [38]	The Experiences of patients and caregivers following a stroke	South Africa	Stroke survivors and caregivers	Cross-sectional	327 stroke patients and 221caregivers		Spirituality is a source of support for both stroke and their caregivers.
Jenkins et al. [39]	Knowledge, attitudes and practices related to stroke in Ghana and Nigeria: A SIREN call to action	Tanzania	Stroke patients, caregivers, traditional healer and others	Cross-sectional	80	Interview schedule Schedule	Stroke in urban Dar was widely believed to emanate from supernatural causes (demons and witchcraft), while in rural Hai, explanations drew mostly on ‘natural’ causes (hypertension, fatty foods, stress). The first option in Hai was hospital treatment, while in Dares-Salaam, where belief in demons led to hospital avoidance, it was traditional healers
Mshana et al. [40]	Urban–rural contrasts in explanatory models and treatment-seeking behaviours for stroke in Tanzania Nigeria	Nigeria Ghana	stroke survivors, community dwellers and health care providers)	Cross-sectional survey and Focus group discussions	165 persons in 26 FG across 8 communities	Semi-structured in-depth interview schedule	In this study a minor percent of participants regarded stroke as a result of old age (12.2%), curse or evil spirit/witchcraft (8%) and will of God or punishment from Allah (4%).When asked about intended action to be taken should a relative develop a stroke, 81.9%), 12.3% and less than 1% would go to hospital, seek specialist Doctor and seek spiritual help or call a herbalist respectively.

2.9 Quality Appraisal

In line with the recommendation of Levac et al. [41], we included additional quality appraisal step. This was done with the aid of Mixed Method of Appraisal Tool (MMAT) version 2011 [42]. The MMAT examines the appropriateness of the aim of the study, adequacy and methodology, study design, participant, recruitment, data collection, data analysis, presentation of findings, discussion and conclusion. The tool has five sections; section 1 is used for qualitative studies, section 2, 3, and 4 are used to assess quantitative studies while section 5 is for studies with mixed methods. In this review's inclusion criteria, we used sections 1, 2, 3 and 4. Study quality was rated in line with the MMAT guideline.

3. RESULTS AND DISCUSSION

3.1 Review Profile

In this review, a total of 195 references were found following literature search. Of this, 64 duplications were found and de-duplicated accordingly. The remaining 131 publications were subjected to eligibility screening and 17 of them passed the review eligibility criteria (Fig. 1). The included studies represented 4/ 46 countries. These include Nigeria (West Africa), Ghana (West Africa), Benin Republic (West Africa), South Africa (Southern Africa) and Tanzania (East Africa). The studies ranged from 2005 to 2019 with most (13) of them published in

published after 2010. The publications included 16 single centre studies and 1 multi-centre study. The sample size varied between 20 (case study) to 1054 (retrospective hospital based survey). Nigeria, Ghana, South Africa and Tanzania provided 41%, 23.5%, 11.8% and 0.6% of the selected articles respectively. The participants in the studies selected for this scoping review include stroke patients, caregivers, apparently healthy community dweller, traditional healers and health workers. All the publications were written in English (Table 1). Regarding methodological strategy, 8 were quantitative, 7 were qualitative and 2 were systematic reviews, which we did not grade. Upon assessment of quality, results shows 9 studies (3 Nigeria, 3 Ghana, 1 Tanzania, 1 South Africa and 1 multi-center study) were rated high. Two Nigerian studies each were rated above average and average (Table 1 and Fig. 2).

3.2 Respondents' Knowledge of Stroke

Result shows that only three studies (three Nigerian and one Ghanaian studies) loaded into theme, "general knowledge of stroke", with total of 11 coded references. Two were community-based studies [27,29], while one was a hospital based study [20]. In Akinyemi et al. [20] and Hamzat et al. [32], most of the participants who have heard of stroke correctly identified brain as the organ affected by stroke, however a significant proportion (28%) of respondents comprising 24 (16.9%) clinical workers and 79 (35%) non-clinical workers did not recognize the

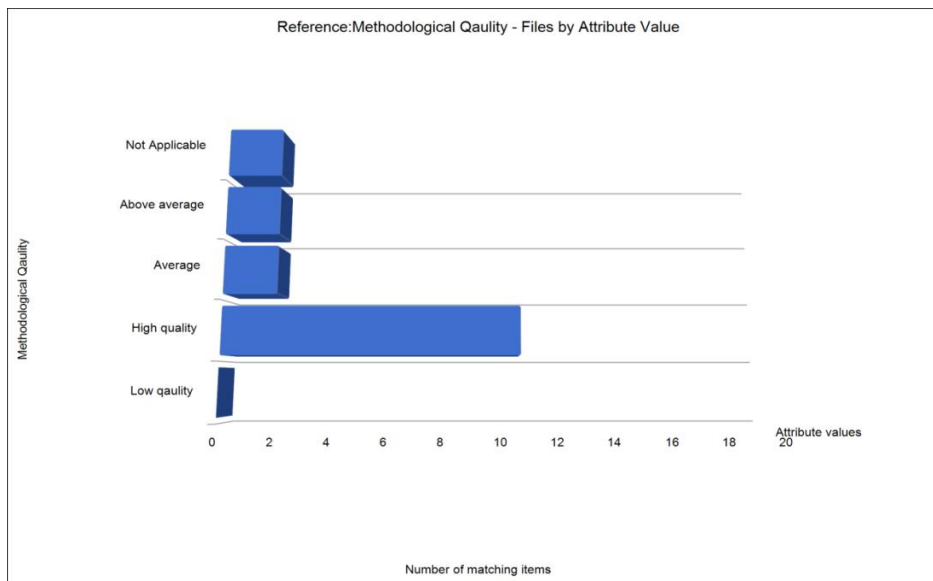


Fig. 2. Methodological quality of the included studies

brain as the organ affected by stroke. The study revealed that higher level of education and being a clinical worker were correlated with better knowledge of stroke. Although most of the respondents in this study have heard of stroke yet their perceptions of stroke were poor being tainted by traditional and spiritual dispositions. Similarly, Donkor et al. [27] revealed that Christian religion was associated with higher levels of awareness of stroke risk factors. In a study, involving educated (at least secondary education) young (20-40 years) Eastern Nigerians, 11% respondents reported not knowing what stroke is [29]. There was no report on awareness of stroke campaign, perceived severity of stroke and knowledge of stroke prevention in the Nigerian studies, however, in Accra, Donkor et al. [27] found that most participants perceived stroke as a serious and preventable by lifestyle modification notwithstanding, their knowledge of risk factors and warning signs was poor and prevalence of self-reported risk factors of stroke was as much as 40%. Furthermore, Donkor et al. [27] sampled awareness of stroke campaign among respondents, with result showing that >80% of the respondents had never come across a stroke campaign in Ghana.

3.3 Perspectives to Aetiology of Stroke

Result shows that 10 (5 Nigerian studies, 2 Ghanaian studies, 1 each for South Africa and Tanzania and multicentre study Nigeria and Ghana) studies, with over 43 coding references loaded into the theme "perspective to stroke etiology". In this study, the following perspectives to the cause of stroke were synthesized:

3.4 Evil Spirit, Witchcraft or Demon as the Cause of Stroke

Seven studies loaded into the sub-theme "Evil spirit, witchcraft, demon, curse/punishment from God as the cause of stroke" Four of these studies were conducted in Nigerians (3 in Southwestern Nigeria and 1 in Southeastern Nigeria), two were conducted in Ghana while one was conducted in Tanzania. A Nigerian hospital based study [20] revealed that as much as 14% of respondents attributed stroke risk to evil spirits/witchcraft despite the facts that the participants were hospital workers. Also, in the study, the heart (30.3%) blood (23.5%) and kidneys (5.4%) were regarded as the organ involved in etiology of stroke. Higher education and being a clinical worker was associated with

knowledge of stroke etiology. In a Nigerian study, Ejike et al. [29], 21% of educated young respondents believed that stroke is result of spiritual attack while 12.6% regarded combined force of natural and spiritual events as the cause of stroke. Similar result was obtained in by Gbiri et al. [30] respondents when asked "what do you think causes stroke" Thirty nine (27.3%) ticked high blood pressure, while 20, 22, 5, 1 and 5 (about 34%) ticked excessive thinking, stress, hereditary, certain drugs and condiments and spiritual attack respectively. Hamzat et al. [32] obtained similar findings in a study conducted in Southwestern Nigeria in which some caregivers held the misconceptions that "stroke is caused by witches and evil spirits", "stroke can be sexually transmitted" and "only adults suffer from stroke".

In Ashanti region of Ghana, stroke was considered a spiritual illness; 13.8% identified evil spirit/witchcraft as a cause of stroke [35]. Similarly, result obtained in an Accra-based study [27] revealed that reasonable proportions, 25% of participants believed stroke affects only is a spiritual event. In a multi-center study [39] conducted in Nigeria and Ghana, demon as the cause of stroke was a belief widely held by the participants in urban Dar unlike in rural Hai, Ghana where a few (4) believed in demon as the cause of stroke. Terms used by these respondents to describe were upepo mbaya (bad win), mdudu (insect) and mnyama (animal). No such belief was reported of the Nigeria respondents in the study. Witchcraft was also believed to be the cause of stroke among Dar participants. These misconceptions were further exemplified with two separate narratives. One from a 65-year-old, and the other from an 80 year old female stroke survivor:

"Stroke cause is similar to convulsions. we say it is mdudu (insect) ... we say it is an animal, meaning it is a bad devil (shetani mbaya) or in other formal language it is a demon. When it attacks you, it either stays in all your body parts, legs and arms or in one part of your body" (From a 65-year-old) [39].

"I do business and was getting some good money. I decided to demolish the mud houses and build cement.and I got stroke" (from an 80 year old female stroke survivor) [39].

Finally, in the Tanzanian study [40] "either curse or evil spirit" was curse a minor but divergent theme across most study groups.

Some also believed stroke is result of “evil imagination”) or a “sin from God” or “punishment from Allah” This postulation is exemplified by the narratives of two respondents:

“A lot of people have no idea what stroke is all about, actually most people, and it is high time we educate them about it to enable them to come to hospitals in time and not waste their time with the spiritualists or herbalists or traditionalists”

“Lots of folk go to traditional healers or herbalists, chemist or quack. The pastor is called to come and pray before going to hospital. If we believe that this is not a medical but a spiritual illness, it is better to pray than to use the meds”

3.5 Sexual Intercourse as the Cause of Stroke

Sex as the cause of stroke was extensively reported in a Ghanaian study [34] while Hamzat et al. [32] revealed that stroke was ill perceived sexually transmitted. Sanuade, [34] revealed that occurrence of stroke was attributed to sexual intercourse. In the study, there were three perspectives to how stroke could be caused by sex namely wrong sex position, frequency of sex and age of the person involving in sex. This is depicted by the narratives of some of the respondents as reported in Sanuade [34].

“I once asked someone, and the person told me that men who like engaging in sexual intercourse are the ones who get it (stroke) most. I don’t know why but that’s what I was told” (Young females, Agorve)

“still with the stroke, some people decide to have sex 4 or 5 times with their sexual partners in a day. This can lead to stroke (Young males, Gyegyeano)”.

“Too much sex can also cause stroke...what he said is true. If you want to be having too many rounds of sex, about 10 in a day, it can make you get stroke Young males” (Young female Agorve).

“Males have their causes of stroke and the females also have theirs. I know a sister in a town who got stroke because of her husband. She heard that her husband had married abroad. The shock of the news made her get stroke. But for us men, too

much of sex causes our stroke” (Elderly males, Tafo).

“Sex can cause stroke depending on the position of the man, precisely standing. When you ejaculate it comes with a force that can make you get stroke” (Young males, Gyegyeano).

Interestingly, the perspective that sex position and frequency of sex were shared similarly by youth, young adults and elderly persons in Dar community irrespective of their gender and seemed to have been tradition handed unto the study participants. However, only the elder women believed having sex at an older age can cause stroke.

3.6 Old Age and Lack of Exercise as the Cause of Stroke

The misconception that stroke only occurs in the elderly was reported among respondents in two studies; one Nigeria [32] and one Ghanaian [27]. The respondents also reported lack of exercise, a phenomenon seen in the elderly people as the commonest cause of stroke.

3.7 Response to a Stroke and Preferred Treatment Choice

3.7.1 Response to a stroke

Results of thematic contents analysis shows that four sources with 9 coding references loaded into the theme “perspective to response to a stroke”. In these, studies participants were asked to indicate their responses should a stroke occur near them. Two of these studies were conducted in Nigeria [20,30], one was conducted in Ghana [27] while the remaining was a multicentre study which took place in Nigeria and Ghana. Akinyemi et al. [20] reported found that a large number of the respondent would go to hospital or seek specialist attention. However, 18% and 14% would seek spiritual and herbal preparations should a stroke occur near them. In Donkor et al. [27], respondents were asked “in the event of a stroke, what would you do?” As much as 55 (8%) planned to visit the herbalist. In Dar, Ghana, of the ten people were interviewed, the first resort for stroke is traditional medicine administered by traditional healers.

3.7.2 Preferred treatment choice

Eight studies explored the theme “preferred treatment choice”. Of these studies, four were

Nigerian studies [20,29,30,32] one each was conducted in Ghana [34,35] and South Africa [38] while one was a multicentre study conducted in Nigeria and Ghana.

In Agyemang et al. [35] stroke was reported be a chronic disease that require spiritual intervention rather than treatment in a hospital. Similarly, Akinyemi et al. [20] found that 61.1% of the study respondents 13% stocked to spiritual healing was most preferred care option. This follows the fact that a similar percent (14%) of the participants attributed stroke risk to evil spirits/witchcraft. In South Eastern Nigerian study, a total of 22.4% of the respondents believed prayers to be the best means of preventing stroke were the best means of preventing a stroke. Of those who believed payer to be the best means of preventing a stroke, 37.7% held that a prayer house was the best place for stroke rehabilitation, while a less proportion (16.45) preferred traditional healing homes for stroke rehabilitation [29]. A similar but different view was held by respondents in a study conducted in both Nigeria and Ghana; some respondents held that a stroke patient may be prayed for immediately after suffering a stroke, or after returning home from a hospital. The respondent believed stated, for example, that prayers make drugs effective. This was better captured in the statement made by a respondent, Hai "God works through the pills by making them effective" There was significant association between religion belief, traditional belief, education and income and choice of healthcare [39]. In Gbiri et al. [30], stroke survivors were reported to have poor knowledge of stroke showed that some (13%) respondents believed stroke is a spiritual attack and as a result sought alternative healthcare for treatment. Furthermore, Gbiri et al. [30] found that knowledge and belief and choice of healthcare were significantly correlated among Nigerian stroke survivors. Hamzat et al. [32] found that while majority 68 (81.9%) caregivers indicated they reported first to hospital after stroke, 14 (16.9%) were said to have first sought the help of the traditional medicine practitioners.

Two studies explored types of healers. These include Hamzat et al. [32] and Mshana et al. [40]. The work of Mshana et al. [40] was more extensive being a case study. They include the spiritual healers and traditional healers. The spiritual healers include prayer house, those and traditional healers who make of herbs and spirits; and those who recite Koranic verses in

combination with plants and animal products. The traditionalist believed the spirit need to possess them to be able to treat a stroke patient successfully. Some traditional healers were reported using a form of divination known in Swahili as kupiga bao or ramli to ascertain the cause of stroke and thereafter treat their patients using plant and animal extracts. Mshana et al. [39] reported patients' perspective of traditional healers. As exemplified in the name the names with which addressed them: they referred to traditional healers as mganga (healers or doctors), waganga wa kienyeji (local healers/doctors) and fundi or (expert).

3.8 Determinants of Choice of Healthcare Setting

Result of thematic content analysis reveals that explored the determinants of choice of healthcare among study respondents. They include "fear of injection", cost of drugs, "lack of confidence in healthcare professionals" spiritual belief, level of education, and poor knowledge of stroke. In Dar, Ghana, Mshana et al. [40] showed that the fear of injections at hospital was a major factor deterring stroke patient from accessing modern of formal healthcare facility. The belief that stroke survivors may die following injection was commonly reported. They believed that demons seeking for blood will gain entrance into the victim's blood if injected. Makganye [38] found that spirituality acts as a source of support for both the patients and the caregivers especially as patients and caregivers were not satisfied with the support they received during the acute support in modern healthcare facilities. On loss of confidence in modern health, Mshana et al. found that patients or caregivers decision to quit for traditional or healing homes is influenced by what patients hear from the doctors. Some patients reported that the doctor told them that there was nothing wrong with their test after having spent lot of money on them. Since the doctor could not see what was wrong with them even in their sick condition, they pursued other available options. For example, a 44-year-old female Ghanaian respondent in Hai narrated such experience:

"I went to KCMC (Kilimanjaro Christian Medical Centre), when I reached there I was admitted for that night ... the next day I was taken for X-ray ... I was taken for a head X-ray and chest" X-ray ... They also took other tests such as blood pressure and the other test for the whole body ... then after giving

out blood they told me that they do not see any problem with my tests”, as reported in Mshana et al. [40].

Also, Akinyemi et al. [20] and Ejike et al. [29] each found that level of education was associated with choice of healthcare; persons with higher education tilt towards seeking formal or orthodox healthcare services.

3.9 Discussion

The fact that a significant proportion of hospital workers and young educated believe stroke to be result of spiritual event or attack displays poor knowledge of stroke. This is consistent with findings of Gbiri et al. [30], and speaks directly of the need for intensive stroke education in the sub-Saharan Africa context. One may wonder what will be of the general sub-Saharan African populace when some hospital workers hold ridiculous misconception about stroke. The finding that Christian religion was associated with better knowledge of stroke suggests that Christian gatherings may serve an important platform for stroke education. An interesting observation in this study is the fact that it is common to find people who though they recognize that the hospital was the right place to seek help following a stroke, but who still preferred combination of hospital services and prayers and or traditional practices. This is consistent with findings of Bamatraf [43], in which participants preferred integration of the traditional healing practices with modern health care. This preference reveals the respondents belief in modern healthcare providers as well as traditional or spiritual care providers. They suppose that traditional practices should be integrated into the modern healthcare provider. It is also this preference stemmed from high cost of health services as obtains in modern healthcare centre [44]. It is surprising however to find significant number of educated persons preferring spiritual attention instead of modern healthcare services. Reports of several challenges arising from poor quality of care in some modern healthcare facilities may have possibly contributed to the yearning for integration of modern and traditional care approaches. According to Lemogoum et al. [45] patients who were disenchanting by hospital ill-treatment stand a high chance of seeking spiritual or traditional care.

The finding that a few respondents maintained their preference for spiritual or tradition stroke

care setting, throughout the study, does not preclude the need for further investigation of the efficacy or the success of the traditional approaches to rehabilitation in sub-Saharan Africa context. Results proves that role of spirituality in success of stroke rehabilitation cannot be completely ignored especially in sub-Saharan Africa where religion and belief is a key determinant of health seeking behavior [30]. The conception of spirituality as an important source of intervention is held across sub-Saharan Africa especially in Ghana and Nigeria. By implication, a successful stroke rehabilitation programme in the sub-Saharan Africa must adopt a holistic and individualistic approach, integrating intervention for every components of health related quality of life including the spiritual sphere [36,37]. The fact that spiritual or faith is a strong determinant of the choice of health care implies that stroke education should incorporate spiritual leaders who are representative of the people’s views [30] because spirituality acts as a source of support for both the patients and the caregivers.

Several gaps in literature were observed including lack of mix methodological strategy to the investigation of the concepts described in this study. We therefore recommend that further studies centering around the subject of this scoping review adopted mix methodology as this approach will produce a more valid outcome upon which interventions can be based. Of the studies included in this review, there was no objective or quantitative measure of the efficacy of spiritual and traditional interventions on functional outcomes in stroke survivors. Also, no objective comparison exists between modern health care and trado-spiritual approach to stroke rehabilitation in terms of functional outcomes and perceived success following stroke rehabilitation. A recognized limitation is the study includes the fact that the qualities of some the studies included in this review were low; hence, the outcome of this review must be interpreted and held with caution.

4. CONCLUSION

There is a growing impact of spiritual and traditional reliefs on perspective to stroke in sub-Saharan Africa, and this has consequences on success of stroke rehabilitation in the region. We recommend that further studies should capture the objective measures of the impact of spiritual and traditional beliefs on indices of successful stroke rehabilitation. The paucity of stroke campaign was also noted in this review. We

recommend that stroke education be included in secondary education curriculum under Health and Physical Education. Health workers must take advantage of the social media in discharging the responsibility of educating the sub-Saharan African populace on stroke, with emphasis on prevention and rehabilitation.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Table 2. Results of pilot search in PubMed

Search terms	Filter	Date of search	Databases	No of articles retrieved
((stroke[MeSH Terms]) and cultural belief [MeSH Terms] OR spiritual [MeSH Terms]AND sub-Saharan Africa[MeSH Terms]))	2005 till date	16/6/2019	PubMed	9

Table 3. Results of search in EBSCO host academic search complete

Search terms	Filter	Date of search	Databases	No of articles retrieved
((Stroke or cerebrovascular accident or cva [SU] and spiritual) [TX] OR stroke or cerebrovascular accident or cva [SU] AND cultural[SU] ANAD sub-sahara Africa [SU]))	2005 till date	16/6/2019	EBSCOhost Academic Search Complete	99

Table 4. Results of search in CINAHL

Search terms	Filter	Date of search	Databases	No of articles retrieved
((Stroke or cerebrovascular accident or cva [SU] AND spiritual) [TX] OR stroke or cerebrovascular accident or cva [SU] AND cultural[SU] AND sub-saharan Africa [SU]))	2005 till date	16/6/2019	CINAHL	53

Table 5. Results of search in PsycINFO

Search terms	Filter	Date of search	Databases	No of articles retrieved
((Stroke or cerebrovascular accident or cva[SU] and spiritual) [TX] OR stroke or cerebrovascular accident or cva [SU] and cultural[SU] and sub-sahara Africa [SU]))	2005 till date	16/6/2019	PsycINFO	28

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