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KNOWLEDGE AND AWARENESS OF EARLY STROKE SIGNS: AN ANALYTICAL REVIEW

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ABSTRACT

Present study sought to provide a research-based evidence regarding knowledge and awareness of early stroke signs via a structured analytical review of the previous studies.

This study was an analytical review that screened the previous studies published between 2018 and 2023 using a combination of the following keywords" Stroke, Knowledge, early signs, awareness, and signs and symptoms". This review included studies published in English within the last five years and discussing similar outcome.

A total of five studies were included in this structured analytical review. The included studies provided variation in the findings related to the knowledge and awareness about early signs of stroke. However, all of the studies stressed the significance of designing interventional educational programs that provide tailored education about early signs of stroke based on individuals' socioeconomic and demographic characteristics.

The study concluded that knowledge and awareness about early signs of stroke is an issue that requires more attention from the researchers at the global level as varied outcomes were reported and no evidences are retrieved about the level of knowledge and awareness about early signs of stroke.

KEYWORDS: *stroke, early signs, knowledge, awareness, review, research-based evidences.*

INTRODUCTION

A stroke is a potentially fatal disorder that develops when there is insufficient blood flow to a certain area of the brain [*Sarkar S et al., 2019*]. The most frequent causes of this are a blocked artery or brain hemorrhage. The neurons within this region begin dying from a shortage of oxygen if there isn't a constant flow of blood [*Sommer C, 2017; Kuriakose D, Xiao Z, 2020*].

In a stroke, the blood flow to the brain is cut off, depriving the brain of oxygen and causing permanent brain damage and functionality decline [*Chavda V et al., 2021*]. Most typically, a clot in an artery delivering blood to the brain is the culprit. Hemorrhage, in which blood leaks into the brain as a result of a ruptured vessel, is another possible reason [*Zille M et al., 2019*]. A stroke can lead to long-term consequences such as partial paralysis, loss of speech, cognitive functions and memory. The extent and type of impairment depend on which area of the brain is injured and how long the blood supply has been cut off [*Goudie F, 2017*].

The prevalence of stroke has already exceeded the level of the pandemic: during the course of a person's life, a stroke is suffered by one in four people over 25 years of age. As of 2020, 12.2 million people suffered a first stroke, of which 6.5 million were expected to die. Currenty, the number of stroke victims worldwide exceeds 110 million people [Kamalakannan S et al., 2017; Roth G et al., 2020].

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Although the risk of stroke rises markedly with age, over 60% of the total of cases occur in adults younger than 70, and 16% in individuals younger than of 50 [*Putaala J, 2016*]. Blood pressure that is too high as a consequence of atherosclerosis is one of the primary clinical risk factors for stroke [*Tabrizi R et al., 2021*]. There are numerous more risk factors, including as smoking, inactivity, poor diet, alcohol and drug abuse, atrial fibrillation, elevated blood cholesterol levels, overweight, hereditary predisposition, anxiety, and depression [*Okonkwo U et al., 2021*].

Stroke warning signs include unexpected tingling or weakness, particularly across one part of the body, of the forehead, arms, or legs. In addition, an individual may feel unexpected uncertainty, difficulties communicating, or difficulty understanding people, unexpected vision problems in one or both of the eyes, unexpected difficulty walking, faintness, lack of control or balance, or abrupt, debilitating headache with no apparent [*Workina A et al., 2021; Hawkes M et al., 2021*].

Reducing the number of stroke cases is an important task by which we can reduce the consequence stroke. Establishing effective primary and secondary prevention strategies at the person and population levels may contribute to reducing the number of cases [*Oh J et al., 2022*]. The individualized (or high-risk) strategy focuses on determining high-risk individuals and modifying the risk factor profiles whether by lowering unhealthy habits or implementing interventions. The population strategy focuses on reducing negative habits at the populations through mass screening or educational efforts [*Melak A et al., 2021*].

Understanding stroke and its early symptoms is necessary to decrease delays in admission following stroke and to enhance risk factor profiles in the population [*Alluqmani M et al., 2021*]. We conducted a study of the relevant literature because it is crucial to comprehend the degree of community awareness of stroke.

The aim of this review is compiling the findings related to knowledge and awareness about early signs of stroke. By combining these findings, audiences will have some idea of how various groups view strokes and be shown areas that can be improved with tailored efforts.

MATERIAL AND METHODS

Research Design: The present study adopted the narrative review design. A thorough, rigorous, and rational assessment of the most recent research on a subject constitutes a narrative or conventional literature review. These are a crucial step in the research process since they aid in developing the conceptual underpinning, framework, and emphasis of the study [*Baethge C et al., 2019*]. In order to find gaps or contradictions in a body of information, a literature review may assist researchers in spotting patterns and themes in the research. This ought to help the researcher arrive with a suitably narrow research problem that supports the study [*Horsley T, 2019*].

Search Strategy: Using different databases including Google Scholar, Science Direct, MEDLINE, EBSCO host, PubMed and EMBASE from 2018 to 2023 in English, a review of literature was conducted. Keywords used were: stroke, knowledge, early signs, awareness, and signs and symptoms. Articles had been screened and filtered according to the inclusion criteria that were published in English language in the period between 2018 until 2023.

These steps are briefly explained in the upcoming sub-sections:

1. Planning the review: Planning is the first step in conducting a structured literature review. It involves setting a plan for the subsequent steps. In this step, the researcher formulates the research question to be answered by the structured literature review [*Butler A et al., 2016*]. After defining the rationale of the structured review, the databases and other secondary sources are searched for any previous structured reviews that address the research question. Then, the researcher develops a search strategy, specifying the steps to be followed during the structured review [*Okoli C, 2015*].

To overcome it is possible, due to the uniting the knowledge and will of all doctors in the world

The structured review protocol includes:

- Gathering background information related to the topic of the structured literature review.
- Identifying and formulating the research question.
- Listing the databases and other data sources to be searched.
- Specifying the inclusion and exclusion criteria.
- Preparing checklists to assess the quality of the studies resulting from search of the databases and other resources.
- Specifying the techniques to be used to extract data from the studies.
- Setting a timeline that determines the start and end points of the structured literature review.
- Submitting the review protocol to an expert to review it and provide feedback [*Baethge C et al., 2019*].

2. Implementing a structured review: After preparing the protocol, the researcher identifies the sources and databases to be used.

- **Search process:** in this step, the researcher determines a search strategy to follow. The search strategy includes exploring both electronic scientific databases and other related sources which may contain studies related to the topic of interest. The researcher documents the whole search process, making it transparent, replicable and able to be analysed again [*Moher D, et al., 2015*].
- **Study selection:** in this step, the researcher selects the most suitable and related studies. The studies are selected based on the previously set inclusion and exclusion criteria. The inclusion and exclusion criteria are set based on the formulated research question [*Baethge C et al., 2019*]. The inclusion and exclusion criteria are applied in order to restrict the studies to the most relevant.
- **Study quality assessment:** the researcher assesses the quality of the relevant studies based on three factors, bias, internal validity and external validity. The quality of the studies is measured by using a checklist tool that includes reference factors and standards subject to evaluation for each study [*Henderson L et al., 2010*].
- **Data extraction:** the aim of this step is to develop forms to extract data. These forms are used to record the data gathered from the relevant studies accurately. It is significant at this step to avoid duplication. If data are extracted from unpublished or running trials, the researcher must report and clarify the limitations of these data. Extracting data from relevant studies has two stages, primary analysis and secondary analysis [*Butler A et al., 2016*].
- **Data synthesis:** synthesizing data includes collecting and summarizing the findings of the primary studies included. Briefly, the extracted data is synthesized for reporting [*Moher D et al., 2015*]. Data synthesis provides an answer to the research question formulated. The answer to the research question might not be built on a single study. It could be built based on evidence provided by many research papers. The researcher has to specify and record all sources that are used to provide an answer to the research question [*Uman L, 2011*].

3. Reporting the structured literature review

The final step of a structured review is documenting the findings. The reporting of a narrative review must be accurate, precise, and follow a scientific writing approach [*Higgens J, Green S, 2011*].

RESULTS

A total of 5 studies were found to be meeting the inclusion criteria and addressing the same study variables. These studies were summarized as following. In Ethiopia, some authors conducted a study that aimed to assess the level of knowledge about stroke risk factors and early warning signs among patients with hypertension in a Felege Hiwot Referral hospital [*Abate A et al., 2019*]. The researchers used the cross-sectional design to achieve the study objectives. A sample of 278 hypertensive patients were recruited in this study throughout the systemic random sampling. A response rate of 97.9% was achieved among the 278 fully responsive individuals who made up the total 284 chosen hypertension patients. About 18.3 percent of them had good understanding of stroke, with more than three-fourths of them, 214 (77%) and 201 (72.3%), failing to recognize any risk factors or warning symptoms of stroke, correspondingly. Lack of physical activity was the risk factor for stroke that the participants were most familiar with (21.58%), while hypertension was the risk factor that was least described (3.6%). The most frequent warning symptom of stroke that participants were aware of was abrupt paralysis on one side of their bodies (35.97%). These results pointed

to the necessity of placing a strong emphasis on stroke educational interventions its risk factors and warning signals through social media or public forums, as well as health education aimed at high-risk low-income populations.

In another study by Singh V. and Jasline J. (2019), a review article was performed and was made up of six studies published between 2008 and 2016. One study results point to a considerable rise in awareness between 67% and 83%, while another study results showed a significant rise in knowledge scores for the pre- and post-tests (42% and 65%, respectively). In one study, the percentage of people who could identify symptoms including facial droop (92% to 95%) and arm weakness or numbness (86% to 97%) varied. The rest of the study demonstrates how programs to raise knowledge and awareness contributed to the improvement in participant outcomes by reducing pre-hospitalization delays for stroke.

Soto-Cámara R. and his colleagues (2020) carried out a study with the goal of describing stroke patients' understanding of warning signs and risk factors. In addition to their perceptions toward a presumed incident, and analysing any potential relationships between these factors and the sociodemographics and clinical manifestations of such patients. The Burgos University Hospital (Spain) stroke patients who were sequentially admitted were all included in a cross-sectional study that was designed. The patient's capacity to recognize two risk factors and two warning indicators as well as the patient's potential responses to a stroke occurrence were the main objectives. Using univariate and multivariate regression analysis, the potential components connected to awareness of warning signs, risk factors, and the proper response to a new occurrence were investigated. The study discovered that inpatients' knowledge of stroke warning signs or risk factors was low. The predictive factors that raise the likelihood of knowing of warning signals, risk factors, or reactivity to a potential occurrence are a prior stroke or secondary/higher education levels [*Soto-Cámara R. et al. (2020*].

In Lebanon, Khalil H. and Lahoud N. (2020) conducted a study that sought to evaluate individual's understanding of stroke, including symptoms, risk factors, and desired actions in the event of a suspected stroke. From May to October 2018, face-to-face interviews with persons 50 and over were done as part of a community-based study at 20 randomly selected pharmacies in Beirut. The survey was organized with both open-ended and closed-ended items. 390 people answered the questionnaire in totality. About 68% of participants were capable of recalling at least one stroke symptom on their own, with headache (29.2%), hemiparesis (25.4%), and dizziness (19.5%) being the most common. Additionally, 85.4% of participants instinctively remembered at least 1 risk factor, with hypertension (48.2%), smoking (20.5%), and stress (43.1%) coming up most frequently. 57.69% of people would call an ambulance if they had a stroke suspicion. Educational qualification and having knowledge of a stroke patient were predictive of recollection of more stroke symptoms and risk factors. More stroke symptoms were significantly linked with an actual response to stroke, although diabetes was negatively associated [*Khalil H. Lahoud N. 2020*].

In another study in the Jordanian context, Barakat M. and others (2021) sought to evaluate the level of stroke knowledge and awareness among Jordanians and identify risk factors for stroke awareness. An anonymous online survey used for this cross-sectional investigation took 10 minutes to fill out. It looked at socioeconomic and demographic traits, risk factor identification, stroke warning signals, symptoms recognition, and early reaction to stroke symptoms. The factors linked to inadequate stroke knowledge were discovered by logistic regression analysis. 573 Jordanian adults in all took part in the study. Significant correlations were found between the patient's educational degree and their capacity to recognize at least one early symptom of stroke and the appropriate response to such symptoms (OR of 3.4 and 2.5, respectively). Different demographic characteristics, such as gender, socioeconomic status, and the probabilities of being a woman against a man or having a medium income versus a low income, were all substantially associated with at least one stroke-related outcome (OR of 6.6 and 4.1, respectively). According to this research, Jordanians have strong understanding and awareness of stroke, which is primarily connected with their degree of education. As a result, new approaches must be taken into account to lower the occurrence of stroke in Jordan, including the requirement for participation in improved awareness programs [*Barakat M. et al., 2021*].

DISCUSSION

A stroke is a medical condition that occurs when the blood supply to the brain is disrupted. This can happen either due to a blockage, known as an ischemic stroke, or the rupture of a blood vessel, known as a hemorrhagic stroke. The lack of oxygen and nutrients to the brain can cause brain damage and lead to a range of symptoms, including weakness or numbness on one side of the body, difficulty speaking or understanding speech, vision problems, and loss of coordination or balance. Stroke is a serious medical emergency and prompt treatment can increase the chances of a good outcome.

As reported by Sørensen K. (2018), promoting health through knowledge involves educating individuals about factors that impact their health and well-being, and empowering them to make informed choices that support a healthy lifestyle. Wu S. and co-authors (2019) reported that this can include information about healthy diets, regular physical activity, stress management, preventive health measures, and other lifestyle habits that can help to prevent disease and promote overall health. Additionally, Jo Y. and co-authors (2019) reported that providing access to accurate health information and resources can help individuals make informed decisions about their health and seek out appropriate care when needed. By promoting health literacy and encouraging individuals to take an active role in their health, we can help to improve outcomes and support healthier communities [*Dunn P, Hazzard E, 2019*].

The findings of the current review revealed that knowledge about early signs of stroke is still an argumentative issue that requires more attention from researchers worldwide. The findings of the previous studies revealed that different factors are influencing knowledge about early signs of stroke and these factors were mostly educational level, gender and socioeconomic factors. This would highlight the significance of providing educational content related to stroke early signs at different levels and for different categories based on their socioeconomic and demographic characteristics.

The levels of knowledge about stroke early signs should be significantly associated with the prevalence rates of stroke among the targeted populations. The prevalence rates of stroke provide a good indicator for the improvement in individuals' knowledge and awareness of stroke and factors influencing them.

Despite the significant findings reported in this study, still there are a number of limitations that could limit the generalization of the study findings. These limitations include that this study was a structured analytical review that require a structured protocol that analyzes the bias in the included studies. In addition, the narrow time window used in this study could be excluding significant studies that provided valid and reliable findings in specific communities and populations or even minor groups.

CONCLUSION

To conclude, the study provided a research-based evidence that knowledge about early signs of stroke still not receiving sufficient attention form the researchers. The study concluded that there are varying findings related to the level of knowledge and awareness about early signs of stroke and this was influenced by socioeconomic and demographic factors of the targeted populations.

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