Jurnal Kebidanan dan Keperawatan Aisyiyah
Vol. 21, No. 1 (2025), pp. (11-21)
e-ISSN 2477-8184
p-ISSN 1858-0610
https://doi.org/10.31101/jkk.3914

Literature Review

Optimising the FAST program for stroke prevention in rural communities: a literature review

Tasya Nabila Agustin, Nur Melizza*, Anis Ika Nur Rohmah, Ollyvia Freeska Dwi Marta
Department of Nursing, Faculty of Health Science, Universitas Muhammadiyah Malang, Malang, Indonesia
melizza@umm.ac.id

Submitted: November 4, 2024 Revised: March 1, 2025 Accepted: March 27, 2025

Abstract
Stroke poses a major challenge for rural communities due to limited healthcare access, low awareness, and cultural barriers to prevention. The FAST method offers a promising approach to early stroke detection by integrating community empowerment and a Transcultural Nursing framework, ensuring cultural adaptability and acceptance. This study uses a literature review method with the PRISMA approach to gather and analyze data from health science journals published from 2019 to 2024, accessed from databases such as Neliti, PubMed, ScienceDirect, and ProQuest. The screening process resulted in 15 articles that met the criteria, focusing on research related to early stroke detection education using the FAST method in at-risk populations. Data collection methods involved a systematic search strategy based on Medical Subject Headings (MeSH) and literature analysis utilizing the Joanna Briggs Institute (JBI) instrument. Analysis of the 15 articles indicates that education using the FAST method significantly enhances community understanding of early stroke symptoms. Through various media, such as posters, leaflets, and animated videos, this intervention is well-received by people of diverse ages and cultural backgrounds. Several studies also demonstrate a significant increase in participants' knowledge after participating in the education program, with p-values <0,05. The FAST method, adapted with a Transcultural Nursing approach, is effective in improving stroke awareness among rural communities. This educational initiative contributes to reducing mortality and disability rates due to stroke in areas with limited access to healthcare services.

Keywords: FAST method, stroke; literature review; transcultural nursing

1. Introduction

Stroke is a major health issue, not only in Indonesia but also globally (Mutiarasari, 2019). The World Stroke Organization reports that one in six people worldwide will experience a stroke at some point in their lives (Saksono et al., 2022). According to other research, stroke has the highest rates of mortality and disability and is a leading cause of physical disability among productive-age and elderly populations (Pujiarto, 2022). Data from the Indonesian Stroke Foundation (Yastroki) indicates that the stroke issue is increasingly critical and urgent, as Indonesia ranks first in Asia for the number of elderly stroke patients (Megawati & Sunarno, 2023)**.** Stroke cases in Indonesia require serious attention due to the rising incidence rate and high mortality (Byna & Basit, 2020).

World Stroke Organization data shows that annually, there are 13.7 million new stroke cases and approximately 5.5 million stroke-related deaths in 2023. In addition, the World Stroke Organisation data noted that more than 12 million people worldwide in 2024 are predicted to have a stroke, and 6.5 million people will die from stroke (Balqis et al., 2022). The Riskesdas data reveals an increase in stroke prevalence in Indonesia, from 7% in 2013 to 10.9% in 2018 (Mongkau et al., 2022). It is estimated that each year, 500,000 people in Indonesia suffer from a stroke, with around 25% or 125,000 individuals dying and the remainder experiencing mild to severe disabilities (Syahrim et al., 2019)**.** The prevalence of stroke among Indonesians based on doctor diagnoses varies by demographic characteristics, with a

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prevalence of 11.0% in males and 10.9% in females. Prevalence rates by age are as follows: 15-24 years (0.6%), 25-34 years (1.4%), 35-44 years (3.7%), 45-54 years (14.2%), 55-64 years (32.4%), 65-74 years (45.3%), and 75 years or older (50.2%). Regionally, stroke prevalence is higher in urban areas (12.6%) compared to rural areas (8.8%) (RI, 2018).

Stroke prevention in rural areas tends to be suboptimal due to limited health awareness and poor accessibility (Saggu et al., 2022). Waddell et al. (2023) report that rural populations tend to be older, have restricted access to medical care, experience higher morbidity and mortality rates, and face poorer health-related quality of life compared to urban residents. In Indonesia, the unmet need for healthcare services is more pronounced in rural areas than in urban settings, indicating that rural healthcare facilities are still insufficient to support community health improvement (Rakasiwi & Kautsar, 2021). Additionally, health information received by rural communities remains very limited (Wijanarko et al., 2022).

The increasing number of stroke cases is partly due to the community's limited knowledge of stroke signs and symptoms, which often results in delayed stroke patient management (Umasugi et al., 2022). Research by Harrington et al. (2020) indicates that tobacco use is higher in rural areas compared to urban areas, impacting the lifestyle of rural communities. Low-income levels in rural communities affect lifestyle choices, healthcare access, and treatment options, making rural populations more susceptible to stroke (Asmaria et al., 2020).

Moreover, rural communities are often deeply rooted in cultural rituals and beliefs (Rafsanjani, 2019). Local cultural backgrounds shape individuals' perceptions of life and health. A transcultural approach through culturally congruent nursing care promotes health and well-being by providing culturally competent nursing care that aligns with complex health knowledge and the well-being of the community. Transcultural Nursing has been shown. To overcome the above problems, the study explained that the most influential factor in improving people's knowledge was having received information about stroke before, which shows the importance of stroke education campaigns as a cost-effective method to increase awareness (Góngora-Rivera et al., 2018).

One of the essential keys to reducing mortality and minimizing brain damage caused by stroke is to provide rapid prevention education, especially to rural communities, on the early signs of stroke using the FAST method (Facial movement, Arm movement, Speech, Time) (Alhidayat & Handayani, 2022). The FAST method is a very simple and easy-to-understand technique for early stroke detection (Basuni et al., 2023). Efforts to reduce stroke cases using the FAST method will be most effective with active community involvement (Muskananfola et al., 2021). Research by Pickham et al. (2018) indicates that the FAST method is effective in detecting stroke symptoms, with significant results (p=0.36).

One nursing approach that can support nurses in providing holistic and comprehensive care is transcultural nursing (Aryati & Widyastuti, 2019). This approach considers clients in all aspects, including the bio-psycho-socio-cultural and spiritual dimensions (Hardini et al., 2019). According to Leininger's Transcultural Nursing theory, nurses must understand the cultural context of the community when delivering care. The three strategies in implementing transcultural care include cultural preservation or maintenance, cultural accommodation or negotiation, and cultural restructuring (Aryati & Widyastuti, 2019). Transcultural nursing education is closely related to the belief that nursing should provide individualized, high-quality, and culturally appropriate care (Tosun et al., 2021). Based on this, we propose a solution for early stroke symptom detection using the FAST method as part of an effort to reduce stroke incidence in rural areas, titled Optimization of the FAST Program in Empowering Rural Communities for Stroke Prevention and Rehabilitation Based on the Transcultural Nursing Theory Model.

2. Research Methods

The steps taken by the author in selecting literature begin with 1) identification of problems, namely whether the use of FAST method education in rural community empowerment can prevent stroke with a Transcultural Nursing-based approach; 2) Data search through the PRISMA method; 3) Screening; 4) Quality Assessment; 5) Data Extraction; and Data Analysis.

The data used in compiling this journal are sourced from various literature and organized using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach. The primary references include health science journals from online journal databases. Databases used include Neliti, ScienceDirect, ProQuest, and PubMed. Keywords are based on Medical Subject Headings (MeSH), combined with the Boolean operators AND and OR to retrieve specific journal data using the following keywords: ("FAST Method" OR "Health Education") AND ("Stroke" OR "Cerebrovascular Accident"). Data were gathered from databases such as Neliti, PubMed, ScienceDirect, and ProQuest, with an initial search yielding a total of (n=288,780) journal articles. The first screening applied the following criteria: a) journals published within 2019-2024, and b) open-access journals with full-text availability, resulting in (n=27,591).

After a second screening based on the criteria of a) studies with a Randomized Control Trial or Quasi-Experimental design, and b) articles discussing education using the FAST method for stroke, some articles did not meet these criteria and were excluded (n = 23,381). In the third screening, 4,210 articles were selected according to the following criteria: a) the topic was available in full text but did not align with the specific topic sought, b) most were review articles, and c) the study participants were not exclusively stroke patients. After excluding 4,190 articles that did not meet these criteria, 20 articles remained. Subsequently, a fourth screening was conducted using SINTA (n=3) and Scopus (n=2). In the final screening, an additional five articles were excluded as they did not meet the inclusion criteria, resulting in a total of 15 included studies. The quality assessment of these studies used the Joanna Briggs Institute (JBI) instrument for Randomized Controlled Trials and Quasi-Experimental studies, with a 50% cut-off to ensure international standards.

Table 1. Inclusion and exclusion criteria by PICO (Population, Intervention, Comparator, and Outcome)

Category	Inclusion criteria	Exclusion criteria
Population	all ages, from children to the elderly	No exclusion criteria
Intervention	FAST Method	No exclusion criteria
Comparator	-	-
Outcome	effectiveness of the FAST method, including duration, frequency, media, and methods used	No exclusion criteria
Study design	Experimental study, RCT	Not an experimental study

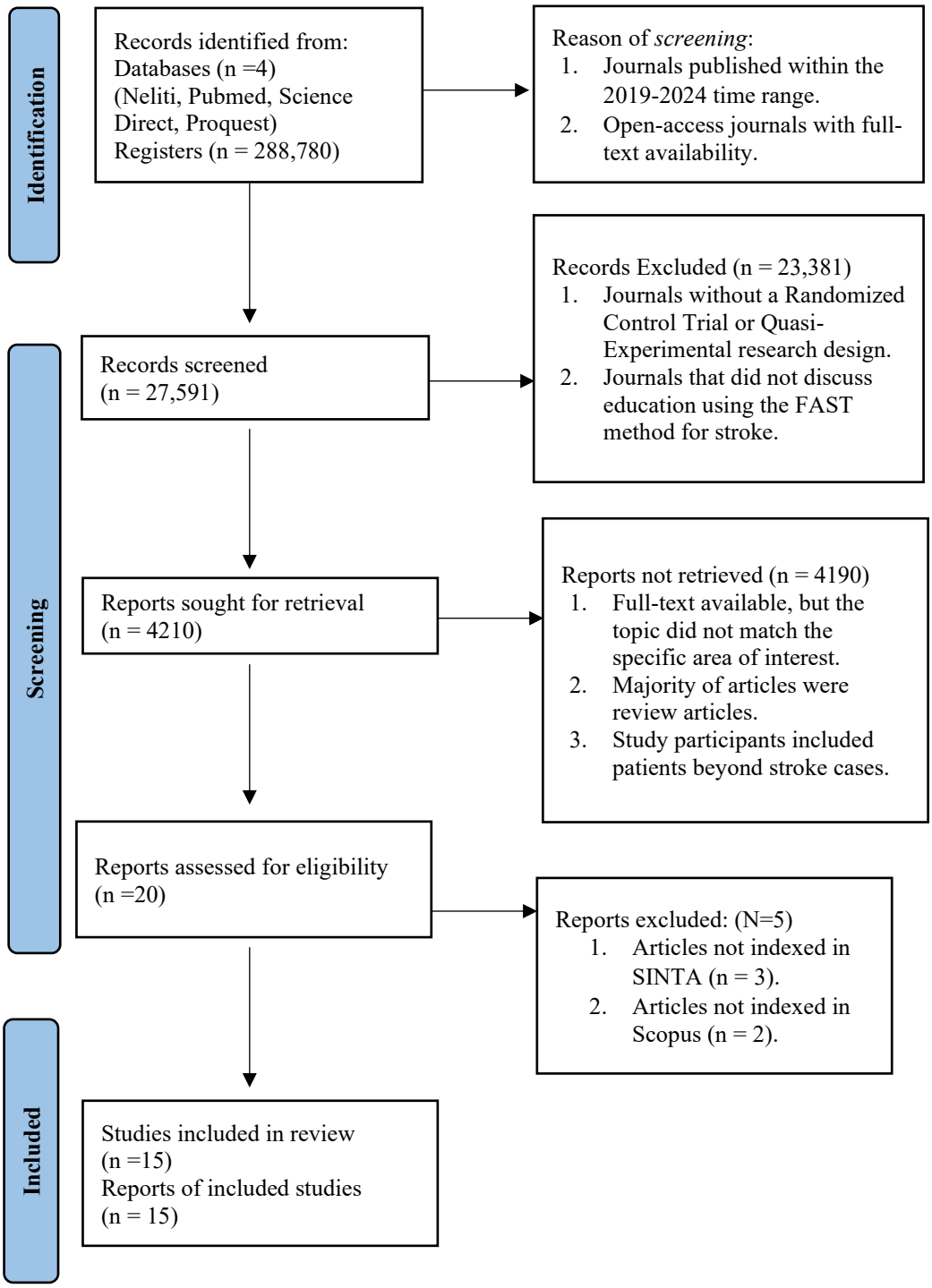

Figure 1. Diagram PRISMA

3. Results and Discussion

3.1.Result

The literature analysis conducted on the ten articles revealed various interventions through the FAST program**.** The first article by Tsakpounidou et al. (2020) reported that preschool children gained knowledge about stroke symptoms with a significant value (P 903). The second study, conducted by Tsai et al. (2022), utilized the FAST method to highlight three recognizable stroke symptoms: facial expression abnormalities, arm movement issues, and speech difficulties, which significantly increased patients' awareness of stroke symptoms. The third study (Tsakpounidou & Proios, 2021) showed that

participants who completed the FAST questionnaire were more able to recognize stroke symptoms. In the fourth study by Asmaria et al. (2020), a significant difference was found between the control group and the intervention group, with a p-value of (p = 0.000). Additionally, the research conducted by Haesebaert et al. (2020) indicated that providing early stroke detection education using the FAST method and prompt actions to contact Emergency Medical Services (EMS) significantly improved community behavior toward stroke events. Furthermore, five national journals from Indonesia were identified in the database search. According to Pomalango (2022), the intervention involved providing educational material on early stroke detection to families and participants at risk of stroke. This study showed that education had a positive impact on family knowledge through early stroke detection education using the FAST method. Pemberian edukasi dengan metode FAST dapat meningkatkan pengetahuan klien mengenai stroke. In studies by Kustanti & Widyarani (2023), Malisngorar et al. (2024), Umasugi et al. (2022) and Pomalango (2022), the provision of health education using the FAST method resulted in significant improvements in clients' knowledge about stroke, each yielding a p-value of (p = 0.000).

Table 2. Journal analysis result

No	Research Title	Respondent Characteristics	Method/Media	Duration	Frequency
1.	(Tsakpounidou et al., 2020)	Children aged 5-6 years	Poster, Lecture, PowerPoint, and Animated Video	3 hours	1-4 weeks
2.	(Tsai et al., 2022)	Age ≥ 20 years	Lecture or Campaign	30 minute	Not mentioned
3.	(Tsakpounidou & Proios, 2021)	4,8-7 years	Print media and online educational videos were used	1 hour	5 weeks
4.	(Asmaria et al., 2020)	46-54 years	Lectures	Dilakukan selama 1 jam	1 months
5.	(Haesebaert et al., 2020)	≥ 65 years	Campaign using posters, leaflets, and videos	1 hour	2 months
6.	(Pomalango, 2022)	36-45 years	In the control group using lectures and leaflets were used. While in the intervention group, using audiovisual methods and leaflets	1-3 hours	1 day
7.	(Kustanti & Widyarani, 2023)	Cadres with an age range not described	Flipbook media	1 hour	1 day
8.	(Malisngorar et al., 2024)	25 families suffering from hypertension in Passo village, Baguala sub-district	Interview and observation methods with leaflet media	Not explained	Not mentioned

No	Research Title	Respondent Characteristics	Method/Media	Duration	Frequency
9.	(Umasugi et al., 2022)	56-65 years	Lecture and questionnaire methods, with campaign media	Not explained	1 month
10.	(Bakri et al., 2020)	35- >43 years	lecture method	Not explained	3 month
11.	(Zhong et al., 2020)	18- ≥75 years	The campaign method includes short video media about stroke, television media, the internet, WeChat, magazines for publicity, pamphlets about stroke education, and posters.	Not explained	1 year
12.	(Tsakpounidou et al., 2022)	5-9 years	The face-to-face method uses workbooks, cartoons, and web-based learning as media.	1 hour per week	6 month
13.	(Zhao et al., 2020)	21-60 years	The national campaign method uses educational videos on stroke detection through online media platforms and educational sessions in schools nationwide.	A video with a duration of 1 minute	2 year
14.	(Nordanstig et al., 2019)	15-79 years	The campaign method uses television advertisements, banners, social media, and websites as media.	Not explained	4 tahun
15.	(Li et al., 2020)	12-18 years	The lecture method uses PowerPoint and a 1-minute educational detection video as media.	20-minute education and a 1-minute educational video	1 year 3 months

3.2.Discussion

Based on the research journal (Kustanti & Widyarani, 2023), stroke is marked by early symptoms such as facial droop, difficulty or inability to move one arm (arm drift), and challenges in speaking clearly (slurring of speech). One strategy to address these challenges is to educate the community on how to recognize the early signs and symptoms of a stroke in the prehospital setting.

The provision of education using the FAST method can enhance knowledge regarding the signs and symptoms of stroke (Basuni et al., 2023). Stroke attacks have a golden period, during which immediate treatment can significantly reduce the likelihood of disability or death. This golden period occurs within the first four hours after a patient exhibits stroke symptoms. Therefore, recognizing the signs of a stroke can help ensure timely intervention (Widniah, 2023). In the research journal by Tsakpounidou & Proios (2021), it was found that parents who received education about stroke symptoms showed positive outcomes. Specifically, 30 out of 80 parents who completed the FAST 112 Heroes program questionnaire were able to recognize the three basic signs of stroke, compared to only 68 out of 80 parents who did not fully complete the FAST 112 Heroes program. In addition to the elderly and adult age groups, material on early detection of stroke is effectively delivered to children and adolescents. According to a research journal (Li et al., 2020), early detection of stroke material provided to adolescents aged 12–18 years proved to be effective, with a significant value of $P<0.001$. For children, the material is presented in the form of cartoons, and learning through websites can enhance stroke-related knowledge that is well understood and transferred from children to their families. This finding is supported by research from Tsakpounidou et al. (2022), with a significant value of $P<0.001$.

The FAST method can be campaigned, disseminated, and taught to high-risk communities as an effort to equip them with knowledge about early stroke detection, thereby enhancing their awareness and understanding. Early stroke detection using FAST can be taught to the community through appropriately designed and tailored programs (Daulay & Ritonga, 2022). According to the research journal by Tsakpounidou & Proios (2021), using printed materials and online educational videos can effectively increase knowledge regarding stroke symptoms. Additionally, research by Asmaria et al. (2020) indicates that lectures directly delivered to participants can enhance their understanding of early stroke detection. Several analyzed studies show that the FAST method can be implemented using various media, such as posters, leaflets, animated videos, and PowerPoint presentations, aimed at facilitating knowledge transfer to participants. Utilizing media like posters, leaflets, and PowerPoint is effective in educating about early stroke detection using the FAST method. For example, research by Rosy (2023) demonstrated that lectures accompanied by leaflets and PowerPoint presentations resulted in a significant increase in knowledge, with a p-value of 0.000. In addition, according to a research journal (Zhong et al., 2020), stroke awareness can be promoted through short video campaigns published via television, the internet, WeChat, magazines, pamphlets, and posters, allowing the information to be directly disseminated to the public. A study by Hong et al. (2020) demonstrated that a national campaign using social media platform-based educational videos effectively improved public knowledge, with a significant value of $P<0.05$.

Moreover, when conducting education for patients, the duration of the session is crucial to consider. The selection of presentation duration can significantly impact the participants' knowledge levels (Artaviachika, 2022). According to Tsakpounidou et al. (2020), a duration of 3 hours per session did not yield significant effects on knowledge levels. Conversely, Perin et al. (2020) suggest that a longer duration may lead to participant boredom and stress, which could diminish the effectiveness of the knowledge imparted. However, a shorter duration may also negatively affect knowledge retention. For instance, in the study conducted by Tsai et al. (2022), an intervention lasting only 30 minutes showed no significant difference between the two groups in recall ability, whether assessed on day 5 or day 30

post-education. This implies that a duration that is too brief may lead to decreased knowledge retention. Therefore, careful consideration of the duration is vital when implementing educational interventions, as both excessively long and overly short durations can influence participants' knowledge levels. Studies by Tsakpounidou & Proios (2021), Asmaria et al. (2020), Tsakpounidou et al. (2022) and Andika (2022) found significant results (p=0.000) when education was provided for 1 hour. Educating participants on early stroke detection with the right duration proves effective in enhancing their knowledge. Furthermore, using a direct campaign method, early stroke detection education delivered through a 1-minute educational video can enhance public understanding and knowledge about stroke. Thus, it can be concluded that selecting approximately 1 hour for sessions and a 1-minute video has proven effective in providing early stroke detection education using the FAST method.

4. Conclusion

The conclusions drawn from the literature analysis above indicate that the FAST (Face, Arm, Speech, Time) method, using various approaches such as campaigns, lectures, interviews, and observations—alongside educational media like leaflets, posters, PowerPoint presentations, animated videos, flipbooks, and audiovisuals—effectively enhances public knowledge of stroke. This FAST method can be implemented across all age groups, from children to adults.

Moreover, the duration and frequency of education sessions significantly influence the effectiveness of the intervention, with materials covering early warning signs of stroke, risk factors, appropriate responses, and early detection using the FAST method. In general, an educational approach based on the FAST method, supported by Transcultural Nursing principles, has proven effective in increasing awareness and understanding of stroke early detection within rural communities. This approach, which emphasizes cultural involvement, has been shown to improve the efficacy of health programs in areas with limited healthcare access, making the FAST method a highly promising strategy for reducing stroke incidence in rural communities.

Acknowledgement

We would like to thank the Faculty of Health Sciences, University of Muhammadiyah Malang, for supporting,g the authors to compile this article.

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