EFFECTIVENESS OF COMMUNITY-BASED THERAPY ON IMPROVING THE FUNCTIONAL ABILITY OF STROKE SURVIVOR: A SCOPING REVIEW

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ABSTRACT

Background: stroke or cerebrovascular accident (CVA) is an acute disturbance of perfusion or blood vessels of the brain. stroke not only causes motor problems, but also cognitive disorders. in the long term a stroke can cause a decrease in muscle tone, resulting in a decrease in the range of motion of the joints and muscle strength which results in the patient's activities being disrupted or even limited. therefore, to minimize this, a community-based therapy program was formed which will improve functional activities and daily activities in stroke survivors. objective: the purpose of this research was to determine the effectiveness of community-based therapy in increasing the functional abilities of stroke survivors. methods: the method used is a critical review of published scientific articles in the 2012-2022 range, which is a randomized controlled trial (RCT) type with quartiles 1 to 4. then a critical appraisal is carried out using the PEDro scale. results: the results of the study are based on the study data that has been carried out, namely 8 articles have a moderate level of bias. conclusion: the conclusion based on the results of a critical review of the 8 selected articles, the community-based therapy program has proven effective in improving functional abilities in stroke survivors

Keywords: community-based therapy, functional ability, stroke survivors.

BACKGROUND

Stroke or Cerebrovascular Accident (CVA) is an acute disturbance of perfusion or blood vessels of the brain. In addition, stroke is also the second leading cause of death and the third leading cause of disability in the world (Pristianto *et al*., 2021). According to the World Health Organization (WHO, 2014), the number of stroke victims based on age and gender, namely, women aged 18-39 reached 2.3% and women aged 40-69 reached 3.3%. Meanwhile, men aged 18-39 years are estimated at 2.4% and those aged 40-69 years are estimated at 2.9%. Meanwhile, according to Basic Health Research (Riskesdas, 2018), the prevalence of stroke in Indonesia has increased from around 7% to 10.9%. The World Stroke Organization shows the results of data for 1 year in stroke cases of 13.7% where 5.5% death occurs.

More stroke risk factors are triggered by high blood pressure, diabetes mellitus, obesity, and other heart diseases. In addition, it can also be influenced by lifestyle factors such as smoking, low activity levels and unhealthy eating patterns (Riyadina *et al.,* 2013). High blood pressure is a factor that significantly affects the occurrence of stroke. several studies have shown a link between high blood pressure and stroke frequency (Herawati *et al.,* 2016). Patients who have had a stroke will undergo physical therapy to restore their condition and functional abilities because a stroke does not only cause motor problems, but also cognitive impairment (Susilo *et al*., 2021). In the long term, stroke can cause a decrease in muscle tone, resulting in a decrease in the range of motion of the joints (ROM) and muscle strength which results in impaired and even limited patient activity (Wakhidah *et al*., 2019). Therefore, to minimize this, a Community-Based Therapy program was formed which will improve functional activities and daily activities in stroke survivors.

Community-Based Therapy is a method of functional rehabilitation and social participation. The concept of this therapy uses recovery methods carried out in the community. and aims to be able

to provide an increase in the activity of functional abilities in stroke survivors (Monita *et al.,* 2022). It also aims to help oneself and others with the same problem, resulting in a change in behavior from aggressive to positive (Magwood *et al*., 2021).

According to previous research conducted by Kidd (2020) said that this community-based therapy program can improve the quality of life and self-efficacy of stroke survivors. However, other studies also state that the existence of this community-based therapy program has little impact on the progress of stroke survivors, however, with the existence of a community-based therapy program, it is also found that there is an increase in patient function compared to patients who do not do this (Reszel *et al*., 2022).

The purpose of this study is to conduct a critical review to determine the effectiveness of community-based therapy in increasing the functional abilities of stroke survivors with a review of previous research articles.

METHOD

The design of this research study is a critical review. Critical review is a method that aims to review, evaluate, and analyze an article that can be used as a source for research. The type of article used in the critical review is a Randomized Control Trial (RCT) with Quartile 1 to Quartile 4 based on the Scimago journal and country rank (SJR). and published in the year 2012-2022. The data search process was carried out through databases which included Pubmed, Physiotherapy Evidence Database (PEDro), and Google Schoolar with the keywords "Stroke Survivors", "Functional Abilities", and "Community-Based Therapy". The PICO standards used in the review are: (P) stroke survivors, (I) community-based therapy, (C) interventions and other training programs, (O) functional ability improvement.

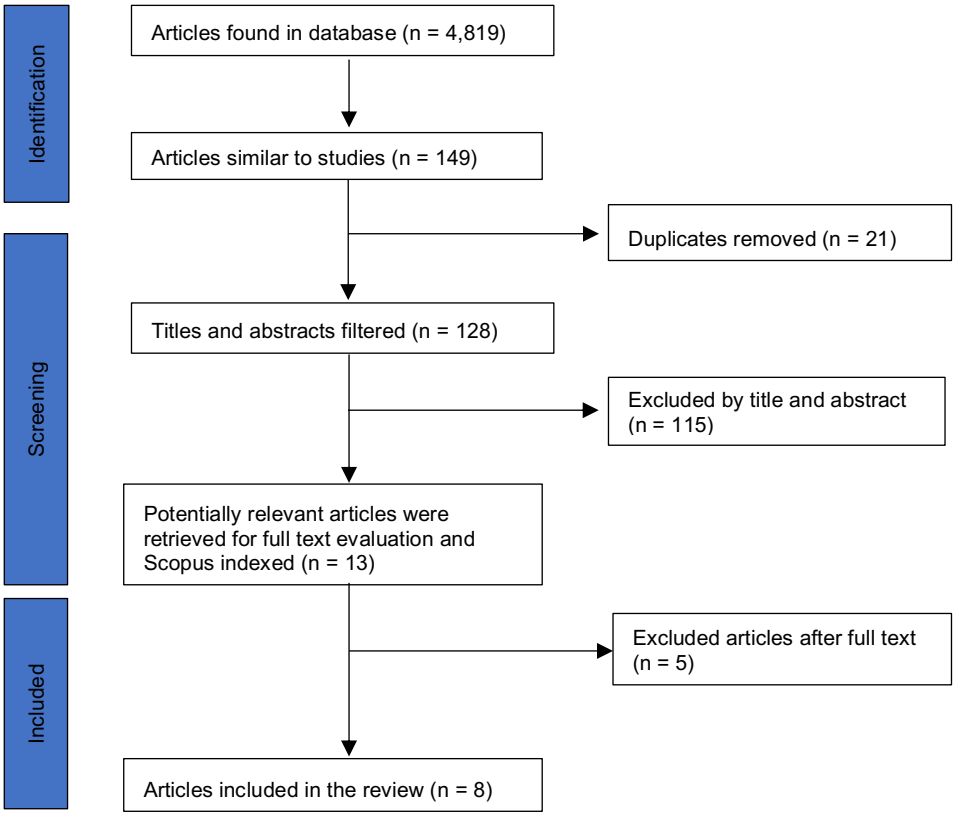

Figure 1. Flow of Searching and Filtering Articles

RESULTS

After going through the data search stages, the results obtained were 8 articles indexed by Scopus with Q1-Q4 values. then the level of bias was determined for all articles using the PEDro scale. The accumulated score results include 3 articles with a total score of 6/10 (moderate risk of bias), 3 articles with a total score of 7/10 (moderate risk of bias), and 2 articles with a total score of 8/10 (moderate risk of bias). The PICO appraisal of the article can be seen in Table 1. And the results of the article assessment with the PEDro scale can be seen in Table 2.

Table 1. PICO

Title	Population	Intervention	Comparison	Outcome
Effects of Tai Chi Yunshou exercise on community-based stroke patients: a cluster randomized controlled trial (Xie *et al*., 2018)	A total of 250 participants aged 45-75 years, from 10 community health centers,	the TC group (n = 120) received Tai Chi Yunshou training 5 times per week for 12 weeks.	the control group (n = 124) received balance rehabilitation training 5 times per week for 12 weeks	Berg Balance Scale Single Leg Stance Test In the time up to go test, there was no significant difference between the TC and control groups in increasing balance and mobility abilities The Fugl-Meyer Assessment (FMA) TC group experienced a higher increase compared to the control group Modified Barthel Index (MBI) ADL increase was higher in the TC group
Treadmill training provides greater benefit to the subgroup of community dwelling people after stroke who walk faster than 0.4 m/s: a randomised trial (Dean *et al*., 2014)	A total of 68 people with stroke living in the community	The experimental group received 30 minutes of treadmill and walking on the ground, done 3 times a week for 16 weeks	The control group received no intervention	Six-minute walk test EuroQol 5Q-5D-3L There is a significant difference between the experimental and control groups
Efficacy of a Community-Based Physical Activity Program KM2H2 for Stroke and Heart Attack Prevention among Senior Hypertensive Patients: A Cluster Randomized Controlled Phase-II Trial (Gong *et al*., 2015)	A total of 450 participants were diagnosed with hypertension from 12 community health centers in Wuhan, China	The intervention group received KM2H2 plus standard CBHCP care (6 centers and 232 patients) consisting of 6 intervention sessions and 2 booster sessions engineered progressively	Control group received standard care only (6 centers 218 patients)	Heart attack and stroke (clinically diagnosed, primary outcome) There was a significant reduction in the incidence of heart attack and stroke in the intervention group Blood pressure (measured, secondary outcome) moderate reduction in blood pressure Physical activity (self-report, tertiary outcome) physical activity increased significantly in the intervention group compared to the control group
Effects of low-intensity endurance and resistance training on mobility in chronic stroke survivors: a pilot randomized controlled study (Lamberti *et al*., 2017)	A total of 35 chronic stroke patients (mean age 68.4 ± 10.4 years; 27 men)	The low-intensity experimental group (LI-E; n = 18) performed intermittent walking on the ground (weeks 1-8) and strength training with a portable apparatus (weeks 5-8)	The high-intensity active control group (HI-C; n = 17) did treadmill walking (weeks 1-8) and strength training with gym equipment (weeks 5-8)	Primary outcome: 6-Minute Walking Distance test showed more improvement for the LI-E group than for the HI-C group Secondary outcome: quality of life using the Short-Form-36 Questionnaire, walking speed using the 10-Meter Walking Test increased significantly in the LI-E group compared to HI-C Balance using the Berg Balance Scale and lower leg muscle performance with strength and power of the quadriceps and femoral biceps increased in both groups
Effects of an integrated transitional care program for stroke survivors living in a rural community: a randomized controlled trial (Deng *et al*., 2020)	A total of 98 people with acute cerebral hemorrhage or brain infarction, 8 weeks after discharge from the hospital	Each participant received stroke unit-based care including acute medical care, early rehabilitation, and health education. patients in the intervention group received continuous rehabilitation at home via a multidisciplinary team, carried out for 8 weeks and a maximum of 2 hours per day	Patients in the control group received secondary stroke prevention however, no rehabilitative assessment and treatment by a multidisciplinary approach	Short-Form Health Survey-36 the intervention group was significantly better than the control group The Modified Bartel Index intervention group showed significantly better results than the control group The Caregiver Strain Index in the intervention group was significantly better than the control group
Randomized trial of treadmill training to improve walking in community-dwelling people after stroke: the AMBULATE trial (Ada *et al*., 2013)	102 people with stroke living in the community	Experimental group 1 did the treadmill for 30 minutes and walked on the ground 3 times a week for 4 months Experimental group 2 conducted training for 2 months	The control group did not receive the intervention	Six-minute walk test 10-m walk test EuroQol EQ-5D-3L VASE Walking Self-Efficacy Scale Adelaide Activities Profile There was a significant increase in the two experimental groups compared to the control group

Effects of Community Exercise Therapy on Metabolic, Brain, Physical, and Cognitive Function Following Stroke: A Randomized Controlled Pilot Trial (Moore *et al*., 2015)	A total of 40 participants aged > 50 years, > 6 months post stroke, moved independently	The sports group was given community-based exercises such as Fitness, Mobility Exercise, Strength/balance Exercise which were carried out for 19 weeks (3 times/week, 45-60 minutes)	The control group was only given stretching	1. physical performance: 6-minute walk test, 10-m walk test, and the Berg Balance Scale 2. cognitive function: Addenbrooke's Cognitive Examination Revised (ACE-R) 3. quality of life: Stroke Impact Scale Version 2.0. There was a significant increase in the exercise group compared to the control group
Community Walking Training Program Improves Walking Function and Social Participation in Chronic Stroke Patients (Kim *et al*., 2014)	26 stroke patients (13 men, age 45-50 years, post-stroke duration 23-64 days)	The Community Walking Training Program (CWTP) group and the control group participated in the same standard rehabilitation program consisting of conventional physical and occupational therapy for 60 minutes per day, 5 times a week, for 4 weeks. In addition, the CWTP group (n = 13) participated in the CWPT program for 30 minutes per day, 5 times a week, for 4 weeks.	The control group (n=13) participated in standard rehabilitation without additional CWTP program	10-m walk test 6-min walk assessment showed a greater increase in the CWTP group compared to the control group ($p<0.05$) Stroke impact scale showed an increase in social participation in the CWTP group compared to the control group ($p<0.05$)

Table 2. PEDro Scale Assessment

Author and year	Quartile (Q)	Eligibility Criteria	Random Allocation	Concealed Allocation	Baseline Comparability	Blind subjects	Blind Therapists	Blind Assessors	Adequate Follow-up	Intention to treat Analysis	Between Group Comparison	Point Estimates and Variability	Result
(Xie *et al.*, 2018) https://doi.org/10.1186/s11556-018-0206-x	Q1	✓	✓	X	✓	X	X	✓	✓	X	✓	✓	6/10
(Dean *et al*., 2014) *http://dx.doi.org/10.1016/j.jphys.2014.03.004*	Q1	X	✓	✓	X	X	X	✓	✓	✓	✓	✓	7/10
(Gong *et al*., 2015) *https://doi.org/10.1371/journal.pone.0139442*	Q1	✓	✓	X	✓	X	X	✓	X	✓	✓	✓	6/10
(Lamberti *et al*., 2017) *https://doi.org/10.23736/S1973-9087.16.04322-7*	Q1	✓	✓	✓	✓	X	X	X	✓	✓	✓	✓	7/10
(Deng *et al*., 2020) *https://doi.org/10.1177/0269215520905041*	Q1	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	8/10
(Ada *et al*., 2013) *https://doi.org/10.1111/j.1747-4949.2012.00934.x*	Q1	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	8/10
(Moore *et al.*, 2015) *https://doi.org/10.1177/1545968314562116*	Q1	✓	✓	✓	✓	X	X	✓	✓	X	✓	✓	7/10
(Kim *et al*., 2014) *https://doi.org/10.1620/tjem.234.281*	Q2	✓	✓	✓	✓	X	X	✓	X	X	✓	✓	6/10

DISCUSSION

Of the 8 articles selected to be the basis of the research, it was found that the population consisted of patients with chronic and post-stroke conditions and stroke survivors who were aged 45-75 years and lived independently or at a community health center. The intervention used is Community-Based Therapy or a community-based therapy program, namely by giving Tai Chi Yunshou exercise, Treadmill exercise, Walking exercise, Fitness and Mobility exercise, Strength/balance exercise.

There are 2 articles that use community-based programs by providing medical care and rehabilitation. The interventions used as comparisons in the participant group were home-based or individual programs, health education, stretching, standard care and rehabilitation. In 8 articles showed significant results in stroke patients who received intervention from community-based therapy programs by providing additional interventions that were considered effective in increasing functional abilities and quality of life in stroke patients.

Community-based therapy programs are not only effective in improving functional abilities and quality of life, but also have an effect on improving balance abilities, motor and cognitive functions (Moore *et al*., 2015). A similar study conducted by Xie (2018) suggested that providing Tai Chi Yunshou training for 12 weeks of rehabilitation with a frequency of 5 times per week in a community-based therapy program led to an increase in balance ability and functional mobility, and was more effective in improving motor function, fear and quality of life compared to rehabilitation. balance. The measuring instruments used in this study were the Berg Balance Scale, Single Leg Stance Test, Time up to go test, Fugl-Meyer Assessment, and Modified Bartel Index.

Of the 8 selected articles, 4 of them used the intervention of a treadmill and walking exercise which were carried out for 1-4 months with a frequency of 3-5 times/week. The four articles concluded that providing treadmill and walking exercise interventions in a community-based therapy program has proven effective in increasing functional abilities in stroke patients. in the research of Ada (2013) who said that treadmill training and overground walking with a dose of exercise for 30 minutes with a frequency of 3 times a week for 16 weeks were effective in increasing functional abilities (walking distance, speed) and health-related quality of life. However, the benefits will decrease once the training stops. The same thing in the research of Dean (2014) found that there was an increase in functional abilities such as the ability to walk. However, the additional benefit of treadmill training and overground walking regarding walking speed decreased over time after 4 months of the intervention.

Measurement of walking function was measured using the 10-meter walking test, 6-minute walking assessment, and community walk assessment after 4 weeks of training with a dose of 30 minutes per day, 5 times a week in the Community Walking Training Program intervention group in walking function, showing a significant increase greater than the control group ($P<0.05$) (Kim *et al*., 2014). Research Lamberti (2017) said that after 8 weeks of treadmill training and walking exercise in a community-based therapy program with low intensity in the condition of chronic stroke patients there was more improvement and showed better results compared to high intensity and was proven to increase functional ability in walking.

CONCLUSION

Based on the results of a critical review of the 8 selected articles, it was concluded that the Community-based therapy program uses additional interventions such as one of which is Tai Chi Yunshou exercise with low intensity which is carried out for 12 weeks of rehabilitation with a frequency of 5 times per week which is proven to be effective in increasing abilities. function in stroke patients with chronic conditions, post-stroke and stroke survivors in the age range of 45-75 years. As well as the Community-based therapy program is considered more efficient because it shows a significant improvement in clinical conditions and affects functional levels and social participation in daily activities compared to usual care.

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