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Review Article

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Global Prevalence of Post-Stroke Disability: A Systematic Review and Meta-Analysis

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Abstract

Introduction: *Stroke is one of the leading causes of mortality and long-term disability globally and represents a major public health challenge. Post-stroke disability commonly affects mobility, communication, self-care, and participation in social and occupational activities. Therefore, this review was aimed to estimate the global prevalence of post-stroke disability.*

Methods and materials: *PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar databases were used for this analysis. We assessed methodological quality using the Joanna Briggs Institute (JBI) critical appraisal checklist. An inverse variance-weighted random-effects model meta-analysis was performed to estimate the pooled prevalence with a 95% confidence interval (CI). The I^2 test statistic was used to check between-study heterogeneity, and the Egger's regression statistical test was used to check publication bias. A p-value of less than 0.05 used to declare statistical significance.*

Results: *The 14 studies included 7739 participants. All of the included studies were cross-sectional studies. Most studies were conducted in Asia region. The Prevalence of post-stroke disability ranged from 16 to 80.8%, with the pooled global prevalence of post-stroke disability with a random-effects model was 45.2% (95% CI: 32.7-57.7). The highest prevalence of post-stroke disability was observed in Asia at 49.2% (95% CI: 33.4–65.0), while the lowest prevalence was found in Africa at 41.7% (95% CI: 36.8–46.5).*

Conclusion: *Despite improvements in medical care, many stroke survivors continue to experience long-term physical and functional limitations that negatively affect their quality of life and independence. This systematic review and meta-analysis revealed that nearly half of stroke survivors experienced functional disability. Therefore, strengthening rehabilitation services, promoting early intervention programs, and improving long-term follow-up care for stroke patients worldwide were needed urgently.*

Keywords: *Post-stroke, disability, Meta-analysis, Systematic review, Global, Prevalence.*

Introduction

Stroke is one of the leading causes of mortality and long-term disability globally and represents a major public health challenge. It is a medical emergency characterized by the sudden onset of focal neurological deficits within a specific vascular territory, resulting from underlying cerebrovascular disease [1-3]. Although advances in acute stroke management have improved survival rates [4], but many of stroke survivors continue to experience persistent physical, cognitive, emotional, and social disabilities that affect their quality of life and independence [5-7]. Post-stroke disability is one of the most severe complications among stroke survivors and contributes substantially to healthcare costs, caregiver burden, and loss of productivity [8-10].

Globally, the burden of stroke continues to increase due to population aging, urbanization, and the rising prevalence of risk factors such as hypertension, diabetes mellitus, obesity,

smoking, and physical inactivity [11-16]. According to the World Health organization report, stroke is the second leading cause of death and a major contributor to disability-adjusted life years worldwide [17]. Many stroke survivors require long-term rehabilitation and support services to regain functional ability and improve daily living activities [18]. However, recovery outcomes vary considerably depending on stroke severity, access to rehabilitation services, socioeconomic status, and comorbid conditions [19, 20].

Even though, the long-term complications of stroke interfere with function, and the level of disability varies based on the type of stroke, location, and the extent of damage [21], post-stroke disability commonly affects mobility, communication, self-care, and participation in social and occupational activities. Previous studies have reported that a substantial proportion of stroke survivors experience moderate to severe functional impairment, and health related quality of life [22, 23].

Despite the growing burden of stroke-related disability, the prevalence of post-stroke disability varies widely across studies and regions. Evidence regarding the pooled global prevalence of post-stroke disability remains limited. Therefore, conducting a systematic review and meta-analysis is essential to provide comprehensive evidence regarding the prevalence of post-stroke disability worldwide for policymakers, healthcare professionals, and rehabilitation specialists design effective intervention strategies, allocate healthcare resources appropriately, and improve long-term outcomes among stroke survivors.

Objective of the review

✓ To determine the prevalence of Post-Stroke Disability

Methods and materials

Study Design and Reporting Framework

This systematic review and meta-analysis were conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [24].

Eligibility Criteria

- Population: Adults (>18 years) with Stroke
- Outcome: Prevalence of post-stroke disability
- Study design: Observational studies (cross-sectional, cohort, or baseline data from longitudinal studies)
- Language: Studies published in English
- Publication status: Published and unpublished studies.
- Case reports, case series, editorials, reviews, and conference abstracts were excluded from this study.

Information Sources and Search Strategy

A comprehensive literature search was conducted using electronic databases of PubMed/MEDLINE, Scopus, Web of Science, and google scholar. Additional studies were identified by screening reference lists of included articles and relevant reviews. The search strategy combined Medical Subject Headings (MeSH) and text words. The search terms used were: stroke, Cerebrovascular accident, neurologic disorder, CVA, disability, impairment, activity limitation, prevalence, incidence, epidemiology, and global.

Study Selection

All identified studies were imported into endnote software and duplicates were removed. Two reviewers independently screened titles and abstracts for relevance. Full texts of potentially eligible studies were then assessed independently against the inclusion criteria. Discrepancies were resolved through discussion.

Data Extraction

Data were extracted independently by all reviewers using a standardized data extraction form. Extracted information included: first author name, year of publication, Study area, Study design, sample size, Prevalence post-stroke disability. Any disagreements were resolved by consensus.

Quality Assessment

The methodological quality of included studies was assessed independently by two reviewers using the Joanna Briggs Institute (JBI) critical appraisal checklist for prevalence studies. Studies were categorized as low, moderate, or high risk of bias based on assessment scores [25].

Effect measures

Proportions were used to measure the effect for the prevalence.

Data Synthesis and Analysis

Meta-analysis was performed to estimate the pooled prevalence of post-stroke disability using a random-effects model. Statistical heterogeneity was assessed using the I^2 statistic. An I^2 test statistics of < 50 was declared as low heterogeneity, 50–75% was moderate, and $> 75\%$ was high heterogeneity [26]. The funnel plot and Egger's test were utilized to check for publication bias objectively and subjectively; while sensitivity analyses were performed to assess robustness of the synthesized results. A subgroup analysis was done based on the region of the study conducted to identify source of heterogeneity.

Results

Study selection

Our literature search retrieved 1362 studies, from which we collected 304 potentially eligible studies after screening the titles and abstracts. Finally, we selected 14 studies after a review of the full article (Fig.1).

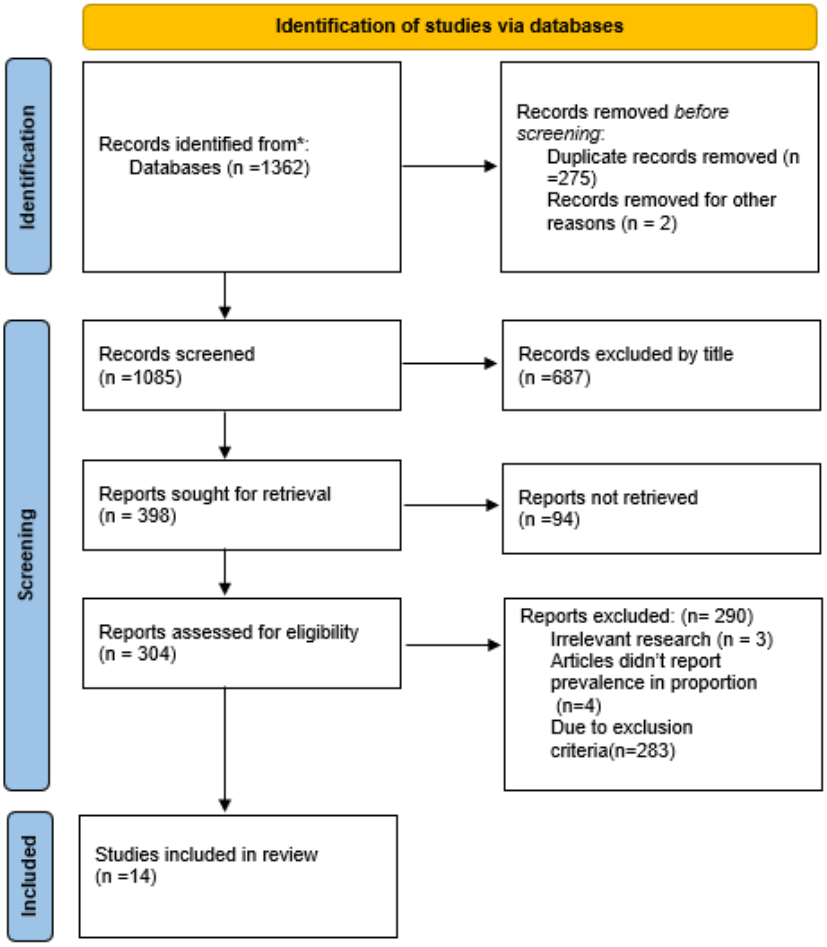

Fig 1: PRISMA flow diagram of study selection for global Prevalence of Post-Stroke Disability.

Characteristics of studies

The 14 studies [27-40] included 7739 participants. All of the included studies were cross-sectional studies and the sample size ranged from 121 [31] to 2231 [29]. Most studies were conducted in Asia region. Among the included studies, Prevalence of post-stroke disability ranged from 16% [40] to 80.8% [32] (Table 1).

Table 1: Characteristics of the included studies in the systematic review and meta-analysis.

Authors Name	Publication Year	Study area	Study design	Sample size	Prevalence with 95% CI
Yang Y,	2016	China	Cross-sectional	893	45(41.7-48.2)
Bensenor IM,	2015	Brazil	Cross-sectional	2231	29.5(27.6-31.3)
Eriku GA	2026	Ethiopia	Cross-sectional	292	38.7(33.1-44.2)
Mohammed T,	2024	Ghana	Cross-sectional	108	42.6(33.2-51.9)
Shil ER.	2020	Bangladesh	Cross-sectional	121	22(14.6-29.3)
Islam MJ,	2025	Bangladesh	Cross-sectional	725	80.8(77.9-83.6)
Oyewole OO,	2016	Nigeria	Cross-sectional	121	47(38.1-55.8)
Lv Y,	2021	China	Cross-sectional	522	46.7(42.4-50.9)
Astuti P	2020	Indonesia	Cross-sectional	139	40.4(32.2-48.5)
Yao YY,	2021	China	Cross-sectional	305	16.7(12.5-20.9)
Zhou J	2022	China	Cross-sectional	1019	72.2(69.4-74.9)
Farzadfard MT	2019	Iran	Cross-sectional	684	69(65.5-72.4)
Carmo JF	2016	Brazil	Cross-sectional	230	66(59.8-72.1)
Singam A,	2015	Sweden	Cross-sectional	349	16(12.1-19.8)

Systematic review and meta-analysis

Prevalence of Post-Stroke Disability

A DerSimonian and Laird random-effects model was fitted to determine the pooled effect size. Accordingly, the pooled global prevalence Post-Stroke Disability with a random-effects model was 45.2% (95% CI: 32.7-57.7) with heterogeneity index (I^2) of 99.3% (p <0.001) (Fig. 2).

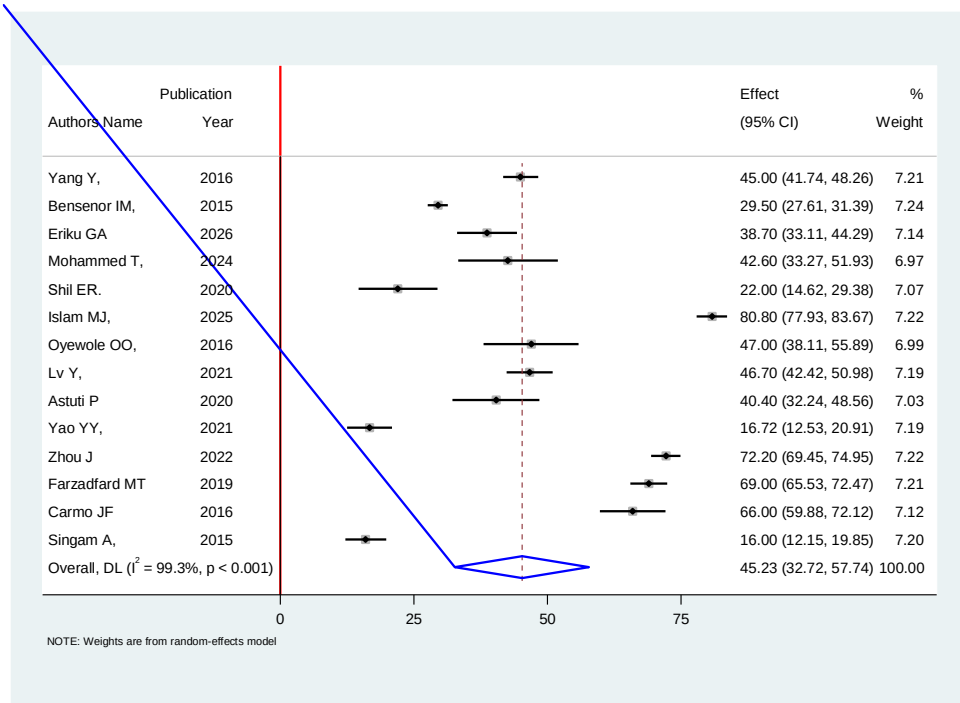

Fig 2: Forest plot showing the pooled global Prevalence of Post-Stroke Disability.

Subgroup analysis

Subgroup analyses revealed a marked variation across regions. The highest (49.2%; 95% CI: 33.4- 65.0), I^2 = 99.3%) seen in Asia region and the lowest (41.7%; 95% CI: 36.8-46.5), I^2 = 19.5%) seen in Africa region (Fig. 3).

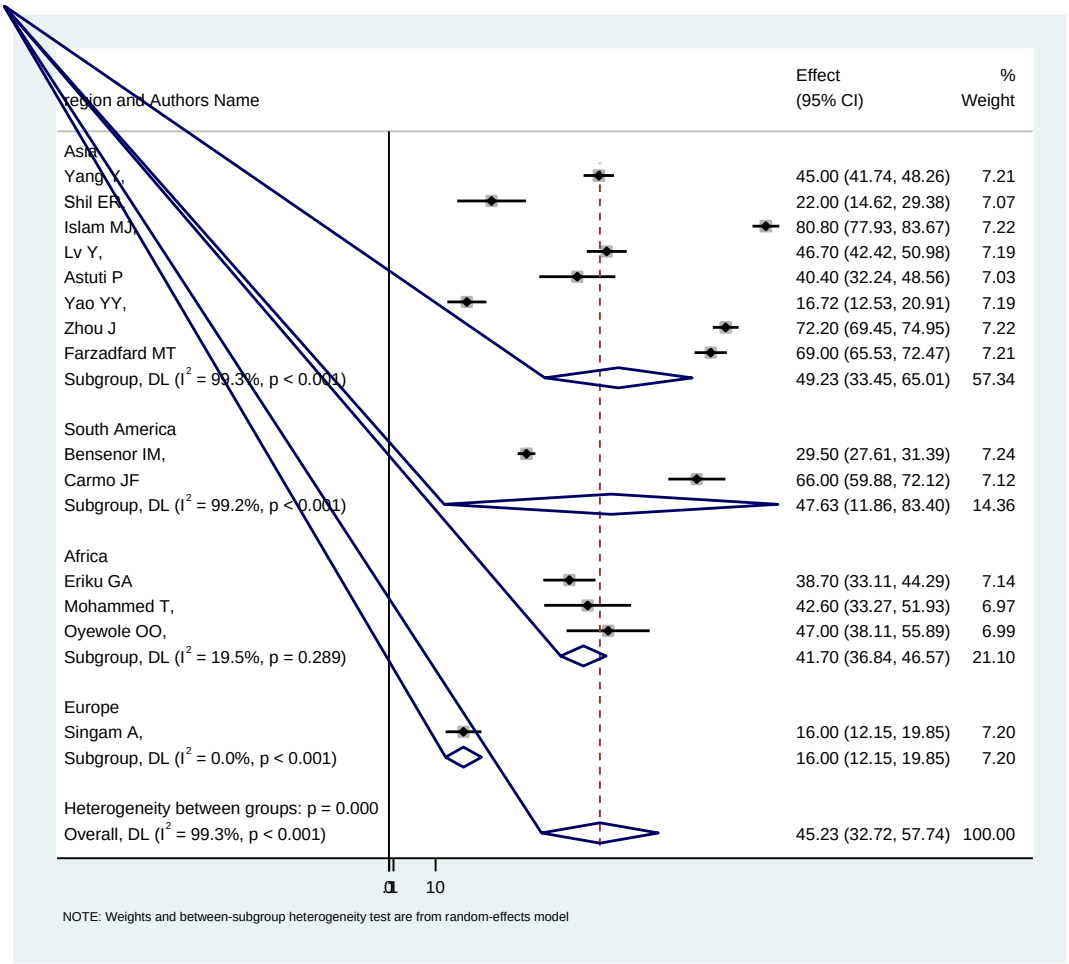

Fig 3: Subgroup analysis of the Prevalence of Post-Stroke Disability.

Heterogeneity and publication bias

To identify the source reported heterogeneity of this study (I^2=99.3%); meta-regression was conducted using sample size and year of publication as a covariate. It was indicated that there is no effect of sample size and publication year on heterogeneity between studies with A P-value of 0.616 and 0.538 respectively (Table 2).

The presence of publication bias was tested by Egger's test, (0.941) and visual inspection of the funnel plot showed asymmetrical distribution of studies around the pooled prevalence estimate, suggesting of publication bias (Fig 4).

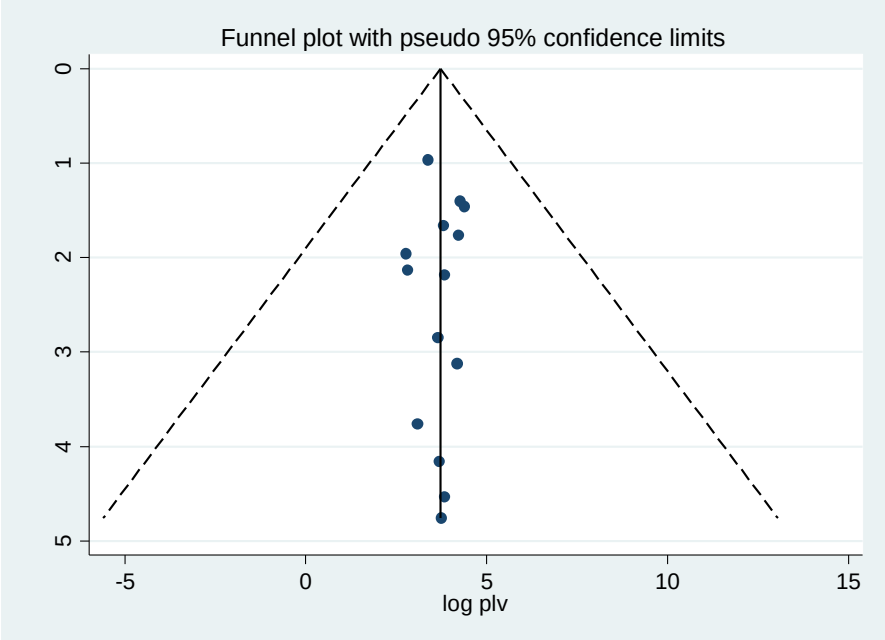

Fig 4: Funnel plot to test publication bias in 14 studies with 95% confidence limits.

Table 2: Meta-regression analysis of factors affecting between-study heterogeneity.

Heterogeneity source	Coefficients	Std. Err.	P-value
Sample size	0.0083567	0.01621	0.616
Publication year	1.686616	2.653559	0.538

Sensitivity analysis

Sensitivity analysis was carried out by removing studies step by step to evaluate the effect of a single study on the overall effect estimate. The result indicated removing a single study did not have a significant influence on pooled prevalence (Fig 5).

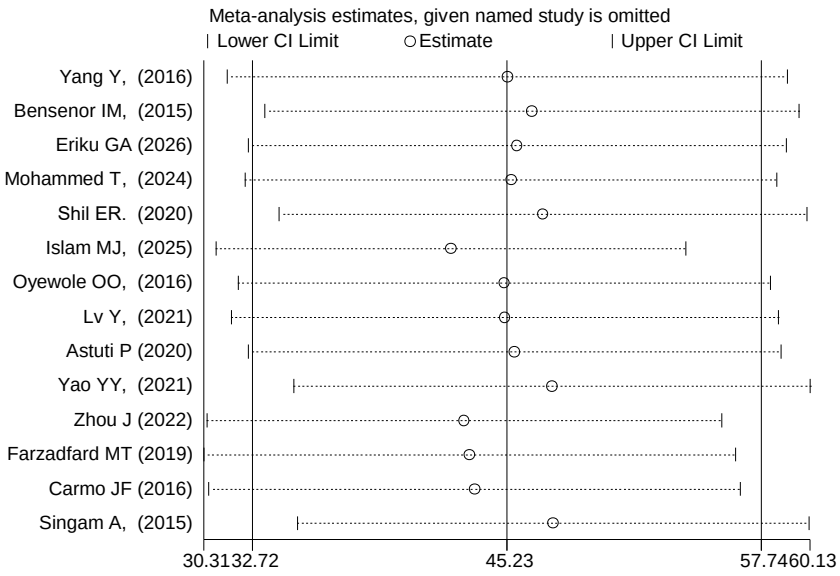

Fig. 6: Sensitivity analysis of pooled global Prevalence of Post-Stroke Disability for each study being removed one at a time.

Discussion

Post-stroke disability significantly affects the health-related quality of life of stroke survivors by limiting their physical, psychological, social, and functional well-being. It is often associated with emotional problems such as depression, anxiety, and reduced self-esteem, further worsening overall quality of life. Studies have shown that stroke survivors with greater functional impairment tend to have poorer health-related quality of life outcomes compared to those with better functional recovery [41-43].

The pooled global prevalence Post-Stroke Disability with a random-effects model was 45.2% (95% CI: 32.7-57.7): indicating that nearly half of stroke survivors experience some degree of functional disability after stroke. The result is consistent with previous studies showing that stroke remains one of the leading causes of long-term disability globally. According to the Global Burden of Disease study, stroke contributes significantly to disability-adjusted life years (DALYs) [44, 45].

In subgroup analysis by region, the highest prevalence of post-stroke disability was observed in Asia at 49.2% (95% CI: 33.4–65.0), while the lowest prevalence was found in Africa at 41.7% (95% CI: 36.8–46.5). The discrepancy might be due to variation on burden of non-communicable diseases in the region, aging populations, urbanization, sedentary lifestyles, underreporting, healthcare infrastructure, socioeconomic conditions, social support, demographic characteristics, and access to rehabilitation services.

Conclusion

Despite improvements in medical care, many stroke survivors continue to experience long-term physical and functional limitations that negatively affect their quality of life and independence. This systematic review and meta-analysis revealed that nearly half of stroke survivors experienced functional disability. Regional variation was also observed. Therefore, strengthen rehabilitation services, promote early intervention programs, and improve long-term follow-up care for stroke patients worldwide was needed urgently. Further large-scale studies using standardized assessment tools are recommended to better understand the burden of post-stroke disability.

Limitation of the study

This systematic review and meta-analysis have certain limitations to be considered. First due to significant heterogeneity of studies, result should be interpreted with caution. Secondly, we encountered difficulties when comparing our findings due to the absence of systematic reviews and meta-analyses done previously.

Declaration

Ethics approval and consent to participant

Not applicable

Consent for publication

Not applicable

Availability of data and materials

all the data analyzed during the current systematic review and meta-analysis is available with reasonable request from corresponding author.

Competing interests

all the authors declare that they have no competing interests

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Not applicable.

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