

The Quality of Life of Stroke Survivors in the Indian Setting: A Systematic Review and Meta-Analysis

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Abstract

Background: The significant burden of stroke on the mortality rates of developing countries, including India, is well-documented in the literature. However, robust data regarding the aggregates of evidence on the quality of life (QOL) of stroke survivors is limited. **Objective:** To gather relevant information for policymakers on the QOL of stroke survivors based on observational studies conducted in the Indian setting. **Methods:** We searched PubMed, Scopus, and Google Scholar for studies conducted in the Indian setting. The methodological quality of each study was scored, and data were extracted from the published reports. The risk of bias assessment was conducted based on the JBI Critical Appraisal Checklist criteria. The relevant data regarding QOL were analyzed by a random effects model using R software. **Results:** 16 studies were included in the systematic review in which the majority of the studies recruited study participants in the hospital-based setting with an average duration of 3-6 months following the stroke episode. Our findings suggest that the pooled mean quality of life in the four dimensions of the World Health Organization Quality of Life instrument (WHOQOL-BREF) were ranged from 46.86 to 61.37 and the overall Stroke Specific Quality of Life scale (SS-QOL) mean score was 157.16. There was a significant inconsistency among the included studies as heterogeneity was high ($I^2 > 97\%$). **Conclusion:** Assessment of the quality of life among stroke survivors is a crucial step to predict the illness' imposed burden and ascertain the effectiveness of the treatment. The present meta-analysis elucidates the aggregate estimates of quality of life and contributes to the research on the quality of life following a stroke in an Indian context.

Keywords: India, quality of life, stroke, stroke survivors

BACKGROUND

Stroke is the second leading cause of death and the third cause of disability-adjusted life years (DALYs) globally.^[1] The available evidence suggests that 85.5% of total stroke deaths are reported from low- and middle-income countries compared to high-income countries. Apart from that, DALYs are significantly high in low-income countries.^[2] Low resources and continued exposure to modifiable risk factors have contributed to higher disability rates and mortality among patients with stroke in low- and middle-income countries. In particular, countries like India have reported that around 14% of global DALY have been lost due to stroke.^[3] It has been reported that 50–70% of stroke survivors regain functional independence, but 15–30% are permanently disabled, and 20% require institutional care at 3 months after onset.^[4] The stroke imposes multiple limitations on sensorimotor, cognitive, and behavioral levels, posing a significant challenge in functional independence, and results in restrictions in the personal, social and occupational role, thereby immensely affecting the QOL.^[5] Developed countries have well-established rehabilitation services that significantly limit functional ailments and provide a better QOL among stroke survivors. However, in low- and middle-income countries, caregivers play rehabilitation roles, creating an immense emotional and

physical strain on them.^[6] Furthermore, caring for a stroke patient is burdensome, and may influence several objective and subjective aspects of the caregiver's life, such as physical and emotional health, morale, work-life balance, finances, social mobility, interpersonal relationships, and sex life. Consequently, studies have reported alarmingly higher levels of anxiety and depression among caregivers of stroke patients, varying from 17–50%.^[7]

QOL assessment has been an essential part of evaluating stroke patients. It includes an individual's perception of their position in life in the context of the cultural and value system in which they live with their expectations and

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concerns.^[8] Stroke has a significant influence on the patient's quality of life. Stroke has many negative consequences on an individual's life ranging from hospitalization and problems in functional independence to cognitive and communication difficulties.^[9] Indeed, most patients survive the initial event and live with multiple disabilities such as hemiparesis, rigidity, and neuropsychological impairment.^[10] The significant burden of stroke in the Indian population is well-documented in the literature.^[11] Further, many individual studies have evaluated the QOL of stroke survivors in the Indian subcontinent. However, robust data regarding the aggregates of evidence on the QOL of stroke survivors is limited. The availability of comprehensive information addressing the overall quality of life is essential for steering strategies to reduce the disease burden. Henceforth, we undertook the review to systematically supplement data for policymakers to target interventions designed to maximize and improve the health-related QOL of stroke survivors.

Objective

To gather relevant information for policymakers on the QOL of stroke survivors based on observational studies conducted in the Indian setting.

METHODS

Search strategy

The present review was prepared as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)^[12] guidelines, and the study protocol was registered in the PROSPERO (CRDXXXXXXXXX). We searched PubMed, Scopus, and Google Scholar, and the following keywords used in various combinations: "Quality of life", "Stroke Survivors", "India". The relevant journals and cross-references of the identified studies were further explored for additional studies. The data search was carried out by two investigators (JJ & MD). The screening was performed by two investigators (SD, BV) who further appraised the full texts of appropriated records to reach a common consensus regarding the inclusion and exclusion of individual studies

Eligibility criteria

Observational studies (Cross-sectional and longitudinal studies) conducted in India reporting the quality of life of stroke survivors measured on a valid assessment scale were included. The review was restricted to the English language with no limit to the year of publication. Studies with inadequate data, studies published as editorials or letters to the editor, conference abstracts, expert opinions, or suggestions were excluded.

Data extraction

One researcher (BV) selected potentially relevant articles and was involved in the preliminary data extraction. The search results were directly downloaded and imported into Zotero software, and searched further for more relevant studies in their bibliographic list. (For a search strategy example in

PubMed, see Supplementary Material 1) Additionally, one investigator (AV) further screened all the eligible studies. If the title and abstracts could not provide enough information, the full-text articles were obtained, then eligibility was screened. A mutual consensus resolved disagreements between the authors. Finally, after reading and discussing a full-text version of the shortlisted publications, the researcher selected the qualified studies based on eligibility criteria. Data extraction was done based on the following study characteristics: author (year of publication), study setting, sample size, age in years, duration of a stroke, survey tool, and the major findings. The extracted data were cross-verified by the author (MD).

Assessment of risk of bias

The JBI Critical Appraisal Checklist was used for the risk of bias assessment of the included studies (available on <https://synthesismanual.jbi.global>). This checklist contains eight criteria with a total quality score ranging from 1 to 8. The score of the included studies was not considered for the study selection criterion. Two review authors independently assessed the risk of bias of the included studies (SS and SD). A third independent reviewer (SSD) addressed discrepancies in the quality scoring of two reviewers.

Statistical analysis

R software was used to perform this meta-analysis, and the pooled estimate of QOL was estimated using inverse-variance weighting method. Assuming the significant inconsistency among the studies, a random-effects meta-analysis model was used, and I^2 statistics were calculated to measure heterogeneity among the studies. The heterogeneity was considered mild, moderate, or high when the I^2 values were 25–50%, 51–75%, and >75%, respectively. The publication bias was considered if there were enough eligible studies (more than ten) to be evaluated for the meta-analysis.

RESULTS

Identification of studies

The database search identified 1232 reports, of which 859 were excluded based on title and abstract screening. After eliminating duplicates, the full texts of 128 articles were retrieved for detailed evaluation, and 112 of these were excluded for reasons summarized in Figure 1. Therefore, 16 eligible articles were identified and included in the systematic review [Table 1].^[13-28]

Study characteristics

All the included studies were observational, and the sample size ranged from 20 to 200. While most of the studies recruited study participants in the hospital-based setting, only two studies were conducted among community-based populations.^[23,26] Most of the studies were conducted in the southern part of India (Kerala,^[21,23,27] Tamil Nadu,^[19,28] Karnataka,^[18,26] and Andhra Pradesh^[24]) in which the age of the study subjects was largely in the late fifties. It was observed that many of the studies included subjects with a duration of 3–6 months following the

Table 1: Characteristics of the included studies

Author/Year of publication	Study Setting	Sample Size (Male/Female)	Age (Mean±SD)	Duration of stroke	Assessment scale	Findings (QOL-Mean±SD)
Raju <i>et al.</i> (2010) ^[13]	Punjab/ Hospital based	162 (113/49)	54.3±12.9	6 Months (Median)	WHOQOL- BREF HADS FIM	Physical: 54.1±15.35; Psychological: 58.1±15.0 Social: 68.2±20.1; Environmental domain: 68.2±17.5 Depression: 37% (60/162); Anxiety: 24% (39/162) Mean score of 7 domains of FMI: 5.81±0.82
Ganjiwale <i>et al.</i> (2016) ^[14]	Gujarat/ Hospital based	54 (37/17)	59.44±12.40	6 Months	WHOQOL- BREF, FIM	Physical: 37.90±9.50; Psychological: 38.16±10.59 Social: 64.09±15.89; Environmental: 40.77±10.65 Mean FIM score: 83.75 (SD-18.46); Self-care (Poor):70% (38/54); Psychological domain (Good): 93%; Cognitive domain (Good): 82%
Jha and Varma (2016) ^[15]	Delhi/ Hospital based	60 (NM)	NM	1 Year	WHOQOL BREF	Physical: 55.86±11.66; Psychological: 58.55±13.54 Social: 57.3±16.06; Environment: 61.75±11.92
Ahmad <i>et al.</i> (2020) ^[16]	Uttarakhand/ Hospital based	129 (86/43)	53.84±14.3	3 Months	WHOQOL BREF BDI, MOCA BI	Physical: 46.82±12.88; Psychological: 58.41±15.57 Social: 70.47±9.99; Environment: 54.55±13.99 Mean BDI Score: 10.62±9.11; Mean MOCA Score: 21.20±3.61; Mean BI Score: 18.47±3.27
Sahu <i>et al.</i> (2021) ^[17]	Rajasthan/ Hospital based	96 (75/21)	65.04±9.982	1 Year	WHOQOL BREF	Physical: 39.69±11.47; Psychological: 36.76±14.74 Social: 46.69±14.23; Environment: 50.42±10.43
Shetty <i>et al.</i> (2016) ^[18]	Karnataka/ Hospital based	20 (13/7)	NM	3 Months	WHOQOL BREF	Mean QOL score as per gender: Physical - 44 (Male), 51 (Female); Psychological - 37.54 (Male), 33.85 (Female); Social - 25.54 (Male), 33.14 (Female); Environmental - 42.38 (Male), 46.71 (Female)
Isaac <i>et al.</i> (2010) ^[19]	Tamil Nadu/ Hospital based	46 (30/16)	63.0±7.2	1.6 Years	WHOQOL BREF, BI, HAM-D	Overall QOL: 78.3±14.1 Depression: 60.9% (26/46) Disability: 52.1%, (24/46)
Kumar <i>et al.</i> (2021) ^[20]	Gujarat/ Hospital based	30 (14/16)	58.16±11.84	2 Months	SS-QOL MMSE	Overall QOL: 163.4±42.42 MMSE score: 27.66 (SD-1.84)
Muralidharan (2019) ^[21]	Kerala/ Hospital based	200 (136/64)	60.03±9.89	3-6 Months	SS-QOL	Overall QOL: 175.88±26.10 Low quality of life (SS-QOL score of less than 60%) was seen in 35 subjects (17.5%).
Roy (2015) ^[22]	Assam/ Hospital based	30 (NM)	54.36	NM	SS-QOL BI HAM-D	Overall QOL: 131.96±25.35 Mean BI Score: 78.33 (SD -25.35) Depression: 10% (3/30)
Rajan <i>et al.</i> (2019) ^[23]	Kerala/ Community based	136 (NM)	61.3±15	6 Months	SS-QOL BI	Median SS-QOL: 185 (147-213) 82.7% (n=124) was moderately dependent 8% (n=12) was severely dependent as per BI.
Mudaliar <i>et al.</i> (2018) ^[24]	Andhra Pradesh/ Hospital based	48 (30/18)	NM	6 Months	SS-QOL BI	Mean SS-QOL Males: 310.909±278; Mean SS-QOL Females: 156.72±121.64 Mean BI Males: 16.09±16.15; Mean BI Females: 9.2727±8.392
Agni <i>et al.</i> (2017) ^[25]	NM/Hospital based	30 (18/12)	51	1 Month	SF-36 FIM	Overall Mean QOL: 32.2 Physical domain Mean: 34.3; Mental domain Mean: 36.4 FIM score (Range): 18–90
Nesan and Kundapur (2018) ^[26]	Karnataka/ Community based	20 (NM)	NM	3 Months	SF-36	Majority of the subjects had poor outcomes in the following: limited physical activities (95%), general health (60%), and bodily pain (60%)

Contd...

Table 1: Contd...

Author/Year of publication	Study Setting	Sample Size (Male/Female)	Age (Mean±SD)	Duration of stroke	Assessment scale	Findings (QOL-Mean±SD)
Chandran et al. (2017) ^[27]	Kerala/Hospital based	40 (26/14)	70.58±10.7	1 Year	SF 36 MBI BDI	Low quality of life in all the domains of SF36. Lowest scores observed in physical functioning (score-21.00) and role limitations due to physical problems (score -1.87). Mean MBI score - 55.25±2.79. Extreme depression was reported in 32.5% (n=13)
Jayaraman and Jagadeesan (2021) ^[28]	Tamil Nadu/Hospital based/Urban	50 (24/26)	NM	NM	EQ-5D-5L	Moderate to extreme problems in QOL: Mobility - 72% (36/50); Self-care - 74% (37/50) Usual activities - 74% (37/50); Pain - 62% (31/50) Anxiety/depression - 82% (41/50)

NM: Not mentioned, WHOQOL-BREF: World Health Organization Quality of Life Instrument, Short Form, FIM: Functional Independence Measurement, HADS: Hospital Anxiety and Depression Scale (Cut off-11), BI: Barthel Index, HAM-D: Hamilton Depression Rating Scale (Cut off- 10/11), SF-36: 36-Item Short Form Health Survey, EQ-5D-5L: European Quality of Life Five Dimension, MMSE: Mini-Mental State Exam, SS-QOL: Stroke Specific Quality of Life Scale, BDI: Beck Depression Inventory, MOCA: Montreal Cognitive Assessment, MBI: Modified Barthel Index

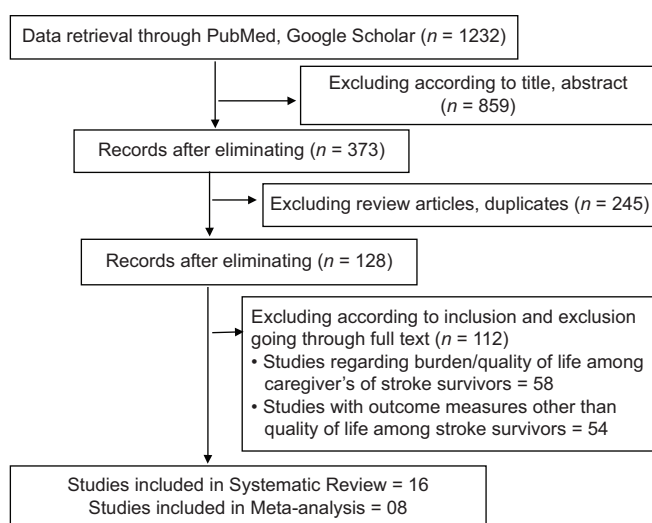


Figure 1: Process of search and selection of studies

stroke episode.^[13,14,16,18,21,23,24,26] The assessment of QOL was most commonly done by using the World Health Organization Quality of Life instrument (WHOQOL-BREF),^[13-19] and Stroke Specific Quality of Life scale (SS-QOL).^[20-24] WHOQOL-BREF is a self-administered instrument developed by the WHO to document QOL in four domains such as physical, psychological, social, and environmental. It is a 26-item questionnaire that measures the QOL on a raw score from 0-100 in which the higher the score, the better the QOL.^[29] The SS-QOL is a disease-specific QOL measure, and consists of 49 items containing 12 domains in which the total score ranges from 49 to 245, with higher scores indicating a better QOL.^[30] Other scales used to measure the QOL include the 36-Item Short-Form Health Survey (SF-36)^[25-27] and European Quality of Life Five Dimensions (EQ-5D-5L).^[28] The SF-36 is a popular instrument for evaluating health-related quality of life. The SF-36 measures QOL in eight scales: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH).^[31] EQ-5D-5L

is a brief measure of health that has been used extensively in stroke and has five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) with five levels of severity (no problems, slight problems, moderate problems, severe problems, and extreme problems).^[32] In eight studies, the level of disability was assessed using the Functional Independence Measure (FIM) and Barthel Index (BI). Some of the studies evaluated the cognitive and psychological status of the study subjects by using Mini-Mental State Exam (MMSE), Montreal Cognitive Assessment (MOCA), Hamilton Depression Rating Scale (HAM-D), and Beck Depression Inventory (BDI).

The quality assessment of the studies using the JBI checklist is estimated in Table 2. Most of the studies had credible information about the eligibility criteria, study population, setting, and scale for assessing the quality of life. The appropriate sample size calculation was not estimated in any of the studies. The reporting structure of the influence of confounding variables was poorly followed in more than half of the studies.

Quality of life

The assessment tools for the quality of life were heterogeneous across the studies. Among the 16 studies on QOL, 8 did not include in the meta-analysis due to inadequate data based on the assessment tools (WHOQOL-BREF: Did not mention all the domains of QOL in two studies; SS-QOL: Did not mention the overall mean QOL in two studies; SF-36: Did not mention all the domains of QOL in three studies, EQ-5D-5L: Only one study was available). Finally, 8 distinct studies which used WHOQOL-BREF ($n = 5$) and SS-QOL ($n = 3$) for measuring the quality of life were included in the meta-analysis. Based on the 5 studies, the pooled mean converted scores of the QOL for the various domains of WHOQOL-BREF were as follows: physical domain 46.86 (95% C.I.: 36.76 to 56.95), psychological domain 50.00 (95% C.I.: 35.78 to 64.22), social domain 61.37 (95% C.I.: 49.40 to 73.35), environmental domain 55.13 (95% C.I.: 42.07 to 68.19). 3 studies estimated the overall QOL based on the SS-QOL scale, in which the

Table 2: Quality of assessment of included studies

Author	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Raju S.R. <i>et al.</i> (2010) ^[13]	1	1	1	1	1	1	1	1
Ganjiwale D (2016) ^[14]	1	1	UC	1	1	1	1	1
Jha N (2016) ^[15]	1	1	UC	1	0	0	1	1
Ahmad T. <i>et al.</i> (2020) ^[16]	1	1	1	1	1	1	1	1
Sahu K R <i>et al.</i> (2021) ^[17]	1	1	UC	1	1	1	1	1
Shetty S. <i>et al.</i> (2016) ^[18]	1	1	UC	1	0	0	0	0
Isacc V. <i>et al.</i> (2010) ^[19]	1	1	1	1	1	1	1	1
Kumar P <i>et al.</i> (2021) ^[20]	1	1	UC	1	0	0	1	1
Muralidharan PC <i>et al.</i> (2019) ^[21]	1	1	1	1	0	0	1	1
Roy KA (2015) ^[22]	1	1	UC	1	0	0	0	0
Rajan B <i>et al.</i> (2019) ^[23]	1	1	1	1	1	1	1	1
Mudaliyar RM <i>et al.</i> (2018) ^[24]	1	1	1	1	0	0	0	0
Agni <i>et al.</i> (2017) ^[25]	1	0	UC	1	0	0	0	0
Nesan (2018) ^[26]	1	1	UC	1	0	0	0	0
Chandran P <i>et al.</i> (2017) ^[27]	1	1	UC	1	1	1	1	1
Jayaraman J. <i>et al.</i> (2021) ^[28]	1	1	UC	1	0	0	0	0

Q1 - Were the criteria for inclusion in the sample clearly defined?; Q2 - Were the study subjects and the setting described in detail?; Q3 - Was the exposure measured in a valid and reliable way?; Q4 - Were objective, standard criteria used for measurement of the condition?; Q5 - Were confounding factors identified?; Q6 - Were strategies to deal with confounding factors stated?; Q7 - Were the outcomes measured in a valid and reliable way?; Q8 - Was appropriate statistical analysis used? (1 - Yes; 0 - No; NA - Not applicable; UC - Unclear)

pooled mean score was 157.16 (95% C.I.: 100.36 to 213.96). There was a significant heterogeneity on the QOL outcome measures (physical domain $I^2 = 97%$; psychological domain $I^2 = 98%$; social domain $I^2 = 98%$; environmental domain $I^2 = 98%$; overall SS-QOL scores $I^2 = 97%$). A forest plot showing the pooled estimates of QOL scores is shown in Figure 2(a)–(d). 3 studies estimated QOL by using the SF-36, in which the scores were lower in the physical functioning aspects compared to other domains. One study used the EQ-5D-5L to ascertain the QOL, which noted significant problems in the routine activities and self-care measures.

DISCUSSION

Assessment of the quality of life of stroke survivors is crucial to predict the imposed burden of the illness and ascertain the treatment's effectiveness. It further adds some insights into the patients' reactions to the illness that might be an indicator of the impact of the impairment on the life of the patients. Though several population-based surveys on stroke were conducted from different parts of India, there is a dearth of evidence of a systematic summary of the post-stroke QOL in this setting. The present study elucidates the aggregate estimates of QOL based on the observational studies conducted among stroke survivors of India. For this purpose, 8 distinct studies which used WHOQOL-BREF ($n = 5$) and SS-QOL ($n = 3$) for measuring the quality of life were included in the meta-analysis. Our findings suggest that the pooled mean quality of life in the four dimensions of the WHOQOL-BREF were ranged from 46.86 to 61.37 and the overall SS-QOL mean score was 157.16. There was a significant inconsistency among the included studies as the level of heterogeneity was high ($I^2 > 97%$). However, the present study provides a systematic account of the QOL of

stroke survivors and contributes to very little research on the QOL following a stroke in an Indian context.

Patients with stroke usually have a lower QOL than the general population. However, there is hardly any comprehensive data in India about the quality of life of stroke survivors. As per the current study, the pooled mean QOL scores based on WHOQOL-BREF were 46.86 (95% C.I.: 36.76 to 56.95), 50.00 (95% CI: 35.78 to 64.22), 61.37 (95% CI: 49.40 to 73.35), and 55.13 (95% CI: 42.07 to 68.19) in the physical, psychological, social, and environmental domains respectively. There are no cut-off points for interpreting the QOL measured by WHOQOL-BREF. It is important to note that the physical domain of quality of life was the area most affected in our study. Some of the earlier studies using WHOQOL-BREF conducted across the globe also reported similar findings.^[33-35] To cite, a study from Hong Kong observed the lowest quality of life in the physical domain (mean 56.30), followed by psychological (mean 58.49), social relationships (mean 66.62), and environment (mean 67.95) among patients 3 months after a stroke episode.^[35] A study from India reported lower mean scores of the WHOQOL-BREF in the physical domain (38.83) followed by psychological (50.76), social (48.53), and environment (49.13) among clients with neurological illness, including stroke.^[36] Contrary to these findings, Baune *et al.* (2006)^[37] reported significantly lower scores in almost all of the domains of the WHOQOL-BREF among stroke survivors. In the present study, the overall QOL of stroke survivors based on the SS-QOL scale was 157.16. A relatively similar SS-QOL based quality of life was also reported from other low- and middle-income countries such as Pakistan (164.18) and southeast Nigeria (156.71).^[38,39] Besides, there is a significant gap in the health care-related benefits for the recovering and debilitated stroke survivor in India, and

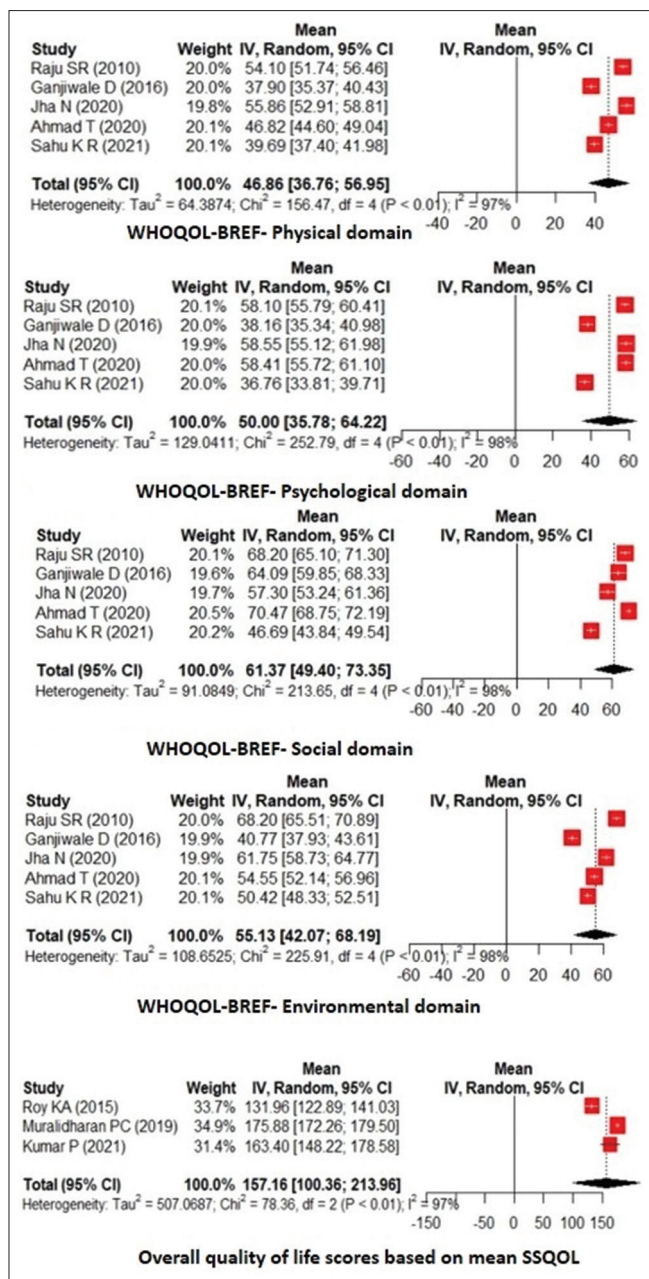


Figure 2: Quality of life based on WHOQOL-BREF using inverse-variance weighting methods

many other developing nations compared to developed nations. Further, the burden of stroke in the developing world is likely to increase substantially, partly due to ongoing demographic changes, including the aging of the population and health transitions in these countries.^[9] Furthermore, the post-stroke emotional disturbances, depression, cognitive deficits and dementia, and functional deficits adversely influence the quality of life of the patients and their family caregivers.^[40] Stroke severity and socioeconomic status are among the major factors that result in caregiver burden. Under-availability and under-utilization of rehabilitation services are reported in India primarily due to socioeconomic factors.^[41] These pieces of evidence highlight the importance of considering the influence

of potential confounders such as stroke severity, its duration, and co-occurring illness before arriving at an inference about the QOL following stroke survivors.

The risk of bias assessment of the included studies has implications for the generalization of our findings. Altogether, the reporting structure was poorly followed in the majority of the studies. The sample size calculation and clinical characteristics of stroke were not addressed in many studies. The lacuna in the available studies includes the lack of longitudinal studies and heterogeneous instruments, making the comparisons an arduous task. In addition to the observed lacunae, future research may also focus upon interventional studies and trials to improve the QOL among this vulnerable population.^[42] The current findings provide an evidence base to successfully meet the challenges ahead while devising appropriate strategies to curtail disabilities among stroke survivors. There are certain clinical implications to the present review. It is evident that QOL is affected following a stroke episode, and identification of the affected domains is crucial to plan for subsequent management. Involvement of different quality of life domains opens an area of discussion regarding the importance of holistic approaches intertwining pharmacological, physical, cognitive, psycho-social, and spiritual-based rehabilitation programs among stroke survivors.^[43]

Strength and limitations

The primary uniqueness of this study is its novelty of a meta analysis reflecting the magnitude of the QOL of stroke survivors in the Indian context. There are certain limitations to generalizing our findings. The results are purely based on observational studies with serious methodological limitations in sampling bias and respondent bias. The level of heterogeneity of the included studies was high due to the suboptimal nature of the quality of the included studies with relatively small sample sizes and multiple scales used across studies. Therefore, findings should be interpreted accordingly.

CONCLUSION

Assessment of the quality of life among stroke survivors is crucial to predict the imposed burden of the illness and ascertain the treatment’s effectiveness. The present meta-analysis elucidates the aggregate estimates of quality of life and contributes to the research on the quality of life following a stroke in an Indian context.

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Conflicts of interest

There are no conflicts of interest.

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Supplementary Material 1: Example of search terms used in PubMed

Search concept	MeSH terms and keywords
Stroke	“Stroke” OR “Acute stroke” [MeSh] OR “Cerebral stroke” OR “Cerebrovascular strokes” OR Stroke survivors [tw]
Quality of life	“quality of life” [MeSH] OR “Life Quality” [tw] OR “Health-Related Quality Of Life [MeSh], “HRQOL” [MeSh]
Search India	(((((stroke) AND (Acute stroke)) AND (Cerebral stroke)) AND (Cerebrovascular strokes)) AND (Stroke survivors)) AND (quality of life) AND (Life Quality) AND (Health-Related Quality Of Life) AND (HRQOL) AND (India)