Disability Inclusion in Employment: Challenges and Best Practices, with a Focus on Stroke Survivors in Sri Lanka

Abstract

Aim: Globally, stroke remains the third-highest international contributor to mortality and functional loss. Returning to work is a major rehabilitation goal after a stroke. This study examines disability inclusion in employment, focusing on stroke survivors in Sri Lanka. Thus, the study examines barriers that stroke survivors encounter when transitioning into or re-entering employment; evaluates institutional or national-level policies, practices, and support systems facilitate or hinder inclusion. Additionally, it evaluates how Sri Lanka's employment sectors can be reformed to better support stroke survivors.

Design: The study adopts a quantitative, explanatory–correlational approach. The study's framework is grounded in disability inclusion theory and Sri Lankan policy. It posits that *Institutional Supports* (e.g. workplace accommodations, supportive policies, vocational training) and *Barriers* (e.g. inaccessible infrastructure, negative attitudes) affect Employment Outcomes for stroke survivors (employment status, job retention, satisfaction), personal attributes (age, gender, education, disability severity) and organizational factors (public vs. private sector, urban vs. rural). The National Hospital of Colombo was selected as the primary study site because it is the largest tertiary care hospital in Sri Lanka. For the present phase of study, 142 responses were considered.

Results: The findings indicate that the transition into or back into employment after acquiring a disability is shaped by multiple barriers and supports. Health-related limitations were the most common barrier, while workplace support, rehabilitation, family support, education, and rights awareness were important employment-related resources. The strongest reliable support index was workplace and self-advocacy support. Supervisor support, coworker attitudes, accommodation, workplace access, and disclosure are central to successful inclusion.

Implications: Results opined that Sri Lanka's disability employment environment requires stronger implementation of existing disability rights and accessibility frameworks. Informal family and peer support appear strong, but formal systems such as vocational rehabilitation, rights awareness, and workplace accommodation procedures remain limited. A rights-based and rehabilitation-linked employment pathway is therefore needed.

Originality: Sri Lankan literature remains fragmented and largely policy-oriented, lacking empirical depth and participant voice. By focusing on a highly underserved subgroup—stroke survivors—this research aims to improve institutional readiness and national policy responses. Ultimately, the study will contribute to creating more inclusive, equitable, and resilient employment systems in Sri Lanka.

Key words: Barriers; Disability inclusion; Sri Lanka; Stroke survivors; Support prevalence

Introduction

Disability inclusion in employment has become a major policy concern globally, reflected in international frameworks such as the UN Convention on the Rights of Persons with Disabilities (CRPD) and the Sustainable Development Goals (SDGs), especially Goal 4 (inclusive and equitable quality education) and Goal 8 (decent work for all). Globally, stroke remains one of the top causes of disability and death. Over 101 million people currently live with stroke-related disabilities, and more than 12 million strokes occur annually, including a significant share among adults under 70 (Feigin et al., 2025; World Stroke Organization, 2025). Stroke is a devastating medical condition and the third-highest international contributor to mortality and functional loss (Feigin et al., 2022). Inopportunely, stroke incidence among working-age adults is increasing (Craven et al., 2026).

In Sri Lanka, the aging population and rise in non-communicable diseases has made stroke a key public health challenge, with survivors facing significant barriers to returning to education or the workforce (Peiris-John et al., 2013; Liyanage, 2022). Stroke is the leading cause of adult disability and is increasingly affecting individuals in their productive years, disrupting education, employment, and quality of life. Sri Lanka is a signatory to the CRPD and has implemented the National Policy on Disability (2003), Protection of the rights of persons with disabilities Act, No. 28 of 1996, and the Accessibility Regulations (2006, amended 2009), yet the implementation gap remains substantial, especially in workforce integration. Most stroke survivors lack access to tailored rehabilitation, assistive technologies, or flexible learning and work arrangements (UNICEF, 2021).

Only 29% of working-age persons with disabilities in Sri Lanka are engaged in any form of economic activity (UNESCAP, 2021), and stroke survivors in particular have a low return-to-work rate without structured support (World Bank, 2019; Peiris-John et al., 2013). Despite a 3% employment quota for persons with disabilities (PWDs) in the public sector, implementation is weak (Government of Sri Lanka, 2006). Furthermore, private sector employers are often unaware of reasonable accommodations, and stigma remains prevalent. Liyanage (2022) notes that without integrated medical, psychological, and occupational rehabilitation, stroke survivors remain disconnected from the labor market even when physically and cognitively capable of participating. Meanwhile, social stigma and inadequate infrastructure continue to marginalize PWDs from opportunities vital for economic and personal development.

Stroke survivors are vastly underrepresented in education and employment research. It is predicted that stroke rates among younger adults will double in the next 15 years; younger adult patients between the ages of 20 and 59 and about four of every 100 strokes happen in people ages 18 to 45 (Edwards et al., 2018).

Employment is one of the most important social roles that a person fulfills and is a significant component of everyday life. For stroke survivors, returning to work provides a boost in confidence and self-esteem. Individuals who return to work after stroke report significantly higher subjective well-being and life satisfaction. The economic impact of stroke is substantial for affected individuals and their families but also for workplaces, government organizations and the broader community (Burfein et al., 2025). International research (e.g., in Australia, the UK, and the US) has shown that return-to-work rates after stroke ranged widely from 7% to 84%. Observational studies also opined that while many stroke survivors are capable of working, a substantial proportion do not due to lack of psychosocial support, information and rehabilitation services (Burfein et al., 2025; Edwards et al., 2018; Radford et al., 2025). Recent literature reviews and qualitative meta-syntheses have highlighted the methodological differences between stroke studies and the complex interplay of stroke and person-related socio-demographic, psycho-social, intervention, employment, and occupational legislative factors influencing employment outcomes (Pinter et al., 2026).

Most disability-related educational studies in Sri Lanka focus on congenital disabilities or early childhood development (UNICEF ROSA, 2021). Sri Lankan literature remains fragmented and largely policy-oriented, lacking empirical depth and participant voice (Kularatne et al., 2020). Research specifically on stroke survivors' inclusion in workplaces is virtually non-existent, despite the increasing number of young- and mid-life adults acquiring disabilities due to stroke.

This study directly addresses those gaps. It aligns with global commitments under the UN Convention on the Rights of Persons with Disabilities (CRPD) and Sustainable Development Goal 4 (inclusive education) and Goal 8 (decent work for all). By focusing on a highly underserved subgroup—stroke survivors—this research aims to improve institutional readiness and national policy responses. Findings will inform: Employer practices and reasonable accommodations and Institutional and policy-level best practices, adapted to the Sri Lankan context. Ultimately, the study will contribute to creating more inclusive, equitable, and resilient employment systems in Sri Lanka.

Research Questions

1. What barriers do stroke survivors encounter when transitioning into or re-entering employment, particularly after acquiring a disability?
2. What institutional or national-level policies, practices, and support systems facilitate or hinder inclusion?
3. What are the most effective practices and interventions—both locally and globally—for promoting disability inclusion, particularly for individuals recovering from stroke?
4. How can Sri Lanka's employment sectors be reformed to better support stroke survivors and other PWDs in alignment with international standards such as the UNCRPD?

Stroke Survivors and Return to Work

Stroke becomes the fourth-leading cause of disability among adults; stroke-related disabilities can include impaired communication, cognition, movement and sensation, vision, hearing, bowel and bladder control, and control of emotions (Johns Hopkins Medicine, 2024). Global stroke incidence increased by 70% between 1990 and 2019, particularly among people aged under 70 years, accounting for 63% of cases (World Stroke Organisation, 2022). Being the leading cause of long-term disability and mortality, approximately 13.7 million new stroke cases reported annually worldwide (World Health Organization, 2022). Unfortunately, the international incidence of stroke in people of working age is rising (Burfein et al., 2025).

Returning to work is a major rehabilitation goal after a stroke because return to work positively influences stroke survivor life satisfaction (Burfein et al., 2025) and quality of life (QOL) (Stolwyk et al., 2024). Conversely, the economic impact of stroke is substantial for financial consequences of affected individuals and their families, workplaces, government organizations and the broader community. Timely and sustained work return is imperative to minimize caregiver burden effects associated with higher rates of anxiety and depression, poorer social and leisure time satisfaction, adverse effects on family relationships, increased mortality, and overall reduced QOL (Rigby et al., 2009). The World Health Organization (WHO) defines QOL as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 2020). As the concept, QOL is generally taken to refer to the

capabilities and satisfaction individuals experience within domains such as physical, mental, and social functioning (Coons et al., 2000) and it is multidimensional construct, integrates physical, psychological and social well-being (Aboobacker et al., 2025).

Literature reported that 57% of survivors aged 65 years or less had returned to work at 12-months post-stroke (53.2% employed at 6 months and 67.4% at 2 years); however, notable proportions of the survivors suffered return-to-work barriers such as available, vocational rehabilitation may not be tailored to stroke survivors' needs, nor timely due to service demands, limited employer knowledge, communication challenges, unrealistic job demands, and unsupportive work cultures (Craven et al., 2026).

The multifaceted nature of stroke recovery is contingent upon critical domains that fundamentally influence the rehabilitation path of survivors (Langhorne, 2021). Recent studies have highlighted the complex interplay of stroke and person-related socio-demographic, psycho-social, intervention, employment, and occupational legislative factors influencing meaningful work return (Burfein et al., 2025). International comparisons of post-stroke vocational rehabilitation are challenging due to differing systems and reporting practices.

Dalemans et al. (2008) reported job role adjustment, a reduction in hours, or workforce re-entry to a different occupation as frequently required to facilitate successful work re-integration for people with stroke recovery. Rojatz et al. (2017) identified intervention 'fit' with existing organisational structures and processes, management support, intervention promotion, and implementer knowledge and competence as influential implementation factors. Quantitative scoping review conducted by Burfein et al. (2025) opined that there was insufficient evidence to identify factors influencing re-employment. It remains unclear if stroke, person-related (i.e., age, cognitive or language impairment, functional ability, aphasia severity, motivation), rehabilitation, or workplace-related (i.e., work-based language demands, occupation), or other factors (i.e., family support, driving capacity) influence the ability to successfully return to work. The study conduct in low-income country, Nigeria, (Adigwe et al., 2022) reveal that the physical dimension reflected by an unknown self-had the most significant negative impact on the QOL of survivors, indicating that the participants in the research study feel more deficient in the physical domain, thereby highlighting the need to improve physiotherapy/rehabilitation approaches.

Stroke-related mortality and morbidity continue to be public health problems in many countries, including Sri Lanka. 87 % of global stroke fatalities occur in low- and middle-income countries, underscores the significant economic and public health challenge that stroke represents universally. Studies on the QOL of stroke survivors are equally scarce, particularly on stroke survivors' inclusion in workplaces of the country. Ultimately, the assessment of stroke survivors' inclusion in workplaces is paramount in highlighting the knowledge gaps in potential factors influencing re-employment of stroke survivors. It is believed that this method will help to uncover behaviours and trends in the thought and opinions of the survivors and will offer insight into their cultural trends, perceptions and experiences to gain further awareness and provide a deeper understanding of the impact of a stroke on QOL.

Methods

The study adopts a quantitative, explanatory–correlational approach. Guided by a rights-based, social-ecological framework, it treats disability inclusion as a measurable outcome influenced by institutional supports and barriers. While primarily quantitative, the design includes supplementary qualitative interviews for contextual depth. The positivist paradigm underpins structured measurement and hypothesis testing (e.g. does greater institutional support predict better employment outcomes?), but a pragmatic stance ensures attention to lived experiences. The approach aligns with public health and occupational research traditions (Creswell, 2014), focusing on statistical relationships to inform policy.

A quantitative methods cross-sectional design is employed. Currently, it is operated by participants who include a broad range of stakeholders directly or indirectly involved in the employment of stroke survivors.

Factors

The framework is grounded in disability inclusion theory and Sri Lankan policy. It integrates the *social model of disability* (which views disability as an interaction between individuals and environment) with socio-ecological factors. The study's framework posits that *Institutional Supports* (e.g. workplace accommodations, supportive policies, vocational training) and *Barriers* (e.g. inaccessible infrastructure, negative attitudes) affect Employment Outcomes for stroke survivors (employment status, job retention, satisfaction). Personal

attributes (age, gender, education, disability severity) and organizational factors (public vs. private sector, urban vs. rural) are covariates that can modify these relationships.

Sri Lanka's disability policy context highlights these dimensions. For example, only 28.7% (Liyanage, 2025) of working-age persons with disabilities are economically active, and stroke survivors often lack adequate rehabilitation and vocational support. Institutional factors are critical: lack of reasonable accommodations, limited vocational training, and attitudinal barriers are repeatedly cited as employment obstacles. Key variables of the study are operationalized as follows:

- Employment outcome (Dependent Variable): Coded primarily as a binary indicator (1 = employed [full- or part-time] vs. 0 = unemployed). We also collect ordinal measures of *job stability* or *satisfaction* (e.g. Likert scales on tenure, underemployment). For some analyses, employment outcome may be treated as ordinal (e.g. not working, working part-time, working full-time).
- Institutional Support Index (Independent Variable): Derived via exploratory factor analysis on survey items about availability of support (workplace accommodations, vocational training, disability-friendly policies, assistive devices provided). Factor scores (continuous) represent latent support constructs.
- Barrier Index (Independent): Derived similarly from items on perceived barriers (e.g. discrimination, physical accessibility issues, transport difficulties, lack of training).
- Disability Type: Categorical (Stroke vs. Other Impairment) to allow subgroup comparisons.
- Demographics/Covariates: Age (years, continuous), Gender (M/F/Other), Education (ordinal: primary, secondary, tertiary), Urban/Rural residence (binary), Income or wealth index (continuous), Marital status (categories).
- Disability Severity: For stroke survivors, the Modified Rankin Scale or Barthel Index score (ordinal/continuous) measuring functional disability. Aphasia presence (yes/no) is also noted.
- Socioeconomic Status (SES): Measured by household asset index or income quintile.
- Sector: Type of employer (public, private, NGO) and industry sector (e.g. manufacturing, services).

The factors are mostly self-reported via questionnaires. Table 1 provides a codebook of major variables (name, description, type, measurement). Annexure 1 depicts the measurement items of the variables.

Table 1: Key variables and their operational definitions

Factor Name	Description/Definition	Type	Measurement Scale or Code
Employment Status	Current work status of respondent	Binary	1 = Employed, 0 = Unemployed
Job Satisfaction	Self-rated satisfaction with employment (if any)	Ordinal	5-point Likert (Very dissatisfied to Very satisfied)
Support Index	Composite score of institutional accommodations	Continuous (factor score)	Derived from EFA on items such as "Employer provides assistive devices," "Accessible workplace" (0–5 scale each)
Barrier Index	Composite score of reported employment barriers	Continuous (factor score)	Derived from EFA on barrier items (e.g. "Lack of ramp," "Negative co-worker attitudes")
Disability Type	Stroke vs. Other (e.g., mobility, visual)	Nominal	1 = Stroke, 2 = Other
Disability Severity	Degree of impairment (Modified Rankin/Barthel)	Ordinal/Continuous	Barthel Index score (0–100)
Age	Age in years	Continuous	Years
Gender	Self-identified gender	Nominal	M, F, Other
Education Level	Highest education attained	Ordinal	1 = No formal, 2 = Primary, 3 = Secondary, 4 = Tertiary
SES (Wealth Index)	Socioeconomic status composite	Continuous	Asset-based index
Sector	Employer type (for stakeholder data)	Nominal	Public, Private, NGO
Training Provided	Whether job training was provided (Yes/No)	Binary	1 = Yes, 0 = No
Accommodations	Number of work accommodations received	Count	0,1,2,...
Policy Awareness	Awareness of disability	Ordinal	Likert (Not aware to Fully

rights/policy	aware)

Most constructs were measured by Likert-type scales or binary indicators. For example, perceived barriers were rated on a 1–5 scale (Strongly Disagree to Strongly Agree), which yielded ordinal data for factor analysis. Questionnaire language was translated into Sinhala and Tamil, and was back-translated to ensure accuracy. The translations were piloted with native speakers. Answers were coded numerically for analysis (e.g., Likert 1–5, yes=1/no=0). Open-ended responses (e.g., "What further support do you need?") were recorded for qualitative insight. A **pilot study** was conducted to evaluate and refine the questionnaire. This involved approximately 10 participants representing stroke survivors.

Population and Sample Size

The target population comprised stroke survivors of working age (18–60) in Sri Lanka and related stakeholders (employers, disability service providers, university disability officers, policymakers) who influenced employment inclusion. Stroke survivors were identified through hospital discharge lists (**Commonly Known for Neurology Services)**, rehabilitation clinics, and stroke support groups in major provinces.

Key Locations Commonly Known for Neurology Services

- Colombo – National Hospital, Lanka Hospitals, Asiri, Nawaloka, Durdans
- Maharagama – Sri Jayewardenepura General Hospital / nearby private services
- Ragama – Colombo North Teaching Hospital
- Karapitiya – Teaching Hospital Karapitiya
- Jaffna – Teaching Hospital Jaffna
- Kandy – Teaching Hospital Kandy
- Anuradhapura – Teaching Hospital Anuradhapura
- Ratnapura – Teaching Hospital Ratnapura

In practice, the initial plan, prior to logistical constraints, was to recruit 300 stroke survivors from across the Sri Lanka in order to ensure robust and reliable estimates. This target was aligned with related work in the field. However, due to practical limitations such as geographic dispersion, time, and resource constraints, the National Hospital of Colombo was selected as the study site, and the actual combined sample was approximately n = 142 across all participant groups.

The National Hospital of Colombo was selected as the primary study site because it is the largest tertiary care hospital in Sri Lanka and receives a high volume of stroke patients from across the country, making it an appropriate setting to capture a diverse sample within the available time and resource limits. As a national referral center, it provides access to patients representing different districts, socio-economic backgrounds, and clinical conditions. Therefore, the achieved sample of n = 142 at this site was considered adequate for the present phase of the study. In addition, other regional centers are expected to be included in future phases of the research to improve geographical representation and expand the sample size.

The analysis draws on the quantitative outputs generated from the uploaded datasets, including descriptive statistics, subgroup comparison tests, exploratory factor analysis of support items, regression models, and model diagnostics.

Findings and Discussion

The findings are organized around demographic characteristics, reliability and validity of support indices, barriers and support prevalence, subgroup differences, multivariable regression results, and implications for employment inclusion policy and practice.

The final analytic sample consisted of 142 respondents. The mean age was 45.45 years with a standard deviation of 13.79 years, indicating a mixed working-age and older adult sample. The average coded time since stroke was 3.03 with a standard deviation of 1.56. The majority of respondents were male, with 97 respondents or 68.3%, while 45 respondents or 31.7% were female.

Education was concentrated at the secondary level. A total of 95 respondents, or 66.9%, reported secondary education. Smaller proportions reported no formal or primary education, diploma or technical education, undergraduate or degree-level education, and postgraduate education. In terms of disability status, 114 respondents, or 80.3%, were classified as stroke survivors, while the remaining 28 respondents were classified as other disabilities or other groups. Disability severity was most commonly moderate, followed by mild and severe.

The sample was highly skewed toward employed stroke survivors. Of the 114 respondents classified as stroke survivors, 111 were employed and only 3 were not employed or classified as other. Therefore, the observed relationship between stroke status and employment is likely influenced by sample composition or recruitment bias. The findings are still useful for identifying patterns of support, barriers, and institutional needs, but causal claims should be avoided.

Reliability and Validity Coefficient

Exploratory factor analysis was conducted on support-related items to derive latent support indices. The retained items included workplace support, disclosure, work accommodation, work access, supervisor support, coworker attitudes, job confidence, skill utilization, rehabilitation, vocational rehabilitation, family support, peer support, self-advocacy, rights awareness, law awareness, perceived equality, goal capacity, and quality of life.

The Kaiser-Meyer-Olkin value was 0.705, indicating acceptable sampling adequacy for factor analysis. Bartlett's test of sphericity was significant at $p < 0.001$, showing that the correlation matrix was suitable for factor extraction. Using Kaiser's rule, six factors with eigenvalues greater than 1 were retained. These factors together explained 65.5% of the variance. Varimax rotation was applied to improve interpretability.

Table 2: Reliability and Validity

Factor	**Interpretation**	**Variance explained**	**Cronbach alpha**	**Interpretation of reliability**
Factor 1	Workplace and self-advocacy support	20.3%	0.852	Strong
Factor 2	Perceived opportunity and life capacity	11.3%	0.435	Weak/modest
Factor 3	Vocational and rights awareness support	8.3%	0.328	Weak
Factor 4	Rehabilitation and family support	7.7%	0.232	Weak
Factor 5	Job confidence and skill use	10.2%	0.835	Strong
Factor 6	Peer network and quality-of-life support	7.7%	0.415	Weak/modest

The strongest and most reliable factor was Factor 1, interpreted as Workplace and Self-Advocacy Support. It had high loadings on disclosure at work, workplace accommodation, workplace access, supervisor support, coworker attitudes, and self-advocacy. Factor 5 was

also reliable and represented job confidence and skill use. The other factors were retained as exploratory indices because their Cronbach alpha values were low. Therefore, the regression analysis used factor scores rather than relying only on summed scales for the weaker indices.

Exploratory Factor Analysis and Latent Support Indices

The EFA identified six support indices. Factor 1, Workplace and Self-Advocacy Support, was the strongest and most reliable factor. Its largest loadings were coworker attitudes, supervisor support, workplace accommodations, workplace access, disclosure at work, and self-advocacy. This indicates that inclusion is not only a matter of individual ability; it depends strongly on workplace culture, supportive supervision, and the availability of practical accommodations.

Factor 5, Job Confidence and Skill Use, was also reliable. It captured whether respondents felt confident in their job and whether their skills were being used. This factor is important because employment inclusion should not be limited to job access alone; it should also involve meaningful work and confidence in one's capacity to contribute.

Factor 4, Rehabilitation and Family Support, was positively associated with employment in the regression model, but its reliability was weak. Further inspection showed that this factor was mainly driven by family support, rehabilitation receipt, and rehabilitation helpfulness. Therefore, it should be interpreted as an exploratory indicator showing how informal support and rehabilitation experience may shape employment outcomes.

Barrier and Support Prevalence

The most common barrier (Table 3) reported in the dataset was health-related difficulty. Health-related barriers were reported by 67 of 129 valid respondents, or 51.9%. This finding indicates that post-disability health limitations remain a major obstacle to sustained employment participation. Other barriers were less common overall, including skills-related barriers at 8.3%, negative attitudes or discrimination at 4.7%, inaccessible transport at 1.5%, and information-related barriers at 1.5%.

Table 3: ***Barrier and Support Factors***

Factor	**n / valid N**	**Prevalence**
Barriers		
Health-related barrier	67 / 129	51.9%

Factor	**n / valid N**	**Prevalence**
Skills-related barrier	11 / 132	8.3%
Negative attitudes/discrimination	6 / 129	4.7%
Inaccessible transport	2 / 130	1.5%
Information-related barrier	2 / 130	1.5%
Support		
High family support	131 / 142	92.3%
High peer help	98 / 116	84.5%
Perceived equal opportunity	114 / 142	80.3%
High capacity to achieve goals	111 / 141	78.7%
Has peer network/support	110 / 142	77.5%
Good/very good quality of life	90 / 142	63.4%
High self-advocacy	67 / 133	50.4%
Aware of rights	22 / 141	15.6%
Vocational training/rehabilitation	5 / 134	3.7%
High law/policy awareness	0 / 142	0.0%

Support items showed (Table 3) a different pattern. Informal social support was high, while formal employment and vocational supports were limited. High family support was reported by 92.3% of respondents, high peer help by 84.5%, perceived equal opportunity by 80.3%, high goal capacity by 78.7%, and peer network support by 77.5%. However, only 15.6% were coded as aware of rights, and only 3.7% reported receiving vocational rehabilitation or training. This suggests that respondents may rely heavily on family and peer systems while formal vocational and rights-based systems remain weak.

Subgroup Comparisons

Subgroup comparisons were conducted using chi-square tests or Fisher's exact tests for categorical variables and Mann-Whitney tests for continuous variables. In the stroke versus other-disability/group comparison, employment status differed strongly between groups, $p < 0.001$. Goal capacity also differed significantly, $p = 0.0019$, followed by education level, $p = 0.0288$, and arm impairment, $p = 0.0325$. Age and years/time since stroke did not differ significantly between stroke and other-disability/group respondents.

The stroke group was much more likely to be employed. Specifically, 97.4% of stroke respondents were employed compared with 28.6% of respondents in the other-disability/group category. This result is important, but it should be interpreted cautiously because it likely reflects sample composition. The other-disability/group category was smaller and more heterogeneous, while the stroke group appears to have overrepresented respondents who were already work-connected.

In the employed versus unemployed/other comparison, barriers were more concentrated among the unemployed/other group. Inaccessible transport differed strongly by employment group, $p < 0.001$. Education level also differed, $p = 0.0024$, as did goal capacity, $p = 0.0047$, and rights awareness, $p = 0.0191$. After Benjamini-Hochberg false discovery rate adjustment, the most robust subgroup differences were employment status, transport barriers, goal capacity, and education level.

Regression Model Results

The primary outcome was binary employment status, coded as employed versus not employed/other (Table 4). A penalized multivariable logistic regression model was used because the sample was imbalanced and because only three stroke respondents were classified as not employed. Predictors included age, gender, education, severe disability, stroke status, urban indicator, policy indicator, and the six EFA-derived support factor scores.

Table 4: Regression Results

Predictor	**Adjusted OR per SD**	**95% CI**	**Interpretation**
Stroke status	8.49	6.45–14.03	Stroke respondents had higher odds of employment, but this is likely influenced by sample composition.
Secondary or higher education	4.10	1.41–6.62	Secondary-level education or above was associated with higher odds of employment.
Support Factor 4	3.15	1.47–5.06	Rehabilitation/family support was positively associated with employment.
Urban indicator	2.75	1.43–4.23	Urban respondents had higher odds of employment.
Policy indicator	2.15	0.99–3.68	Policy exposure showed a positive but borderline association.

Predictor	Adjusted OR per SD	95% CI	Interpretation
Support Factor 3	2.13	1.04–4.27	Vocational and rights awareness support was positively associated with employment.
Support Factor 5	1.49	1.06–2.65	Job confidence and skill use were positively associated with employment.
Degree or higher education	0.55	0.35–0.87	This likely reflects subgroup composition rather than a causal negative effect of higher education.

The strongest predictor was stroke status, but this finding requires caution. Because 111 of 114 stroke respondents were employed, the model is partly affected by near-separation. The result should not be interpreted as meaning that stroke itself increases employment. Instead, stroke status likely acts as a marker of sample composition, recruitment pathway, and labor-force attachment.

An ordinal logistic model was also estimated using job confidence as a Likert-type outcome. In that model, stroke status, Factor 1, secondary education, and age showed positive associations with higher job confidence. Factor 1 was especially conceptually important because it reflects workplace and self-advocacy support. This suggests that workplace support may be more relevant for quality of employment and confidence than for basic employment access.

Model Diagnostics and Sensitivity Analysis

The employment logistic model showed very high apparent discrimination, with an in-sample ROC AUC of 0.992. The Hosmer-Lemeshow test did not indicate poor fit, with chi-square = 9.796 and p = 0.2797. Multicollinearity was not a major concern because all variance inflation factor values were below 3, with the highest VIF being 2.702 for the policy indicator.

Residual diagnostics identified one main outlier-like case. Excluding cases with absolute Pearson residuals greater than 2 did not materially change the model discrimination, and AUC remained high. However, the high AUC should not be interpreted as strong external predictive validity. It likely reflects the near-complete separation between stroke status and employment in this sample.

For the ordinal model, a Brant-style diagnostic suggested that the proportional-odds assumption may be questionable for some predictors, especially Factor 1 and Factor 6. Therefore, the ordinal model should be interpreted as exploratory. Future research should confirm these findings using larger samples and formal proportional-odds diagnostics or partial proportional-odds models.

The findings show that employment inclusion for stroke survivors and other persons with disabilities is shaped by a combination of health barriers, workplace support, rehabilitation access, self-advocacy, and institutional readiness. Health-related barriers were the most common barriers overall and were particularly high among unemployed or other respondents. This supports the view that return-to-work after stroke requires more than general employment support (Dalemans et al., 2008); it requires rehabilitation-linked employment planning, flexible work arrangements, and workplace accommodations that respond to functional limitations.

The strongest support systems in the sample were informal, especially family support and peer support (Burfein et al., 2025). While these are valuable, the low prevalence of vocational rehabilitation and rights awareness indicates a gap in formal institutional support. This is consistent with the broader Sri Lankan context described in the article draft, where policy frameworks such as the National Policy on Disability, the Protection of the Rights of Persons with Disabilities Act, and Accessibility Regulations exist, but implementation gaps remain.

The EFA results reinforce the importance of workplace-level inclusion. The strongest and most reliable latent factor was workplace and self-advocacy support, consisting of supervisor support, coworker attitudes, accommodations, work access, disclosure, and self-advocacy. This suggests that employment inclusion depends heavily on the immediate workplace environment (Rojatz et al., 2017). Policies must therefore move beyond symbolic inclusion and ensure practical accommodations, supervisor training, and safe disclosure procedures.

The regression findings suggest that education, urban location, rehabilitation/family support, vocational and rights awareness support, and job confidence are associated with employment. However, the strong stroke-employment association is likely affected by sample bias. The stroke group was overwhelmingly employed, while the comparison group was smaller and more heterogeneous. Thus, the findings should be interpreted as exploratory and descriptive rather than causal.

Overall, the findings align with the international literature emphasizing that return to work after stroke is influenced by socio-demographic, rehabilitation, psychosocial, workplace, and

policy factors (Adigwe et al., 2022; Burfein et al., 2025; Craven et al., 2026). The results also support the principles of the UN Convention on the Rights of Persons with Disabilities, especially the right to work, reasonable accommodation, equal opportunity, and inclusive employment systems.

Conclusion and Implications

This study examined disability inclusion in employment, focusing on stroke survivors in Sri Lanka. The findings indicate that the transition into or back into employment after acquiring a disability is shaped by multiple barriers and supports. Health-related limitations were the most common barrier, while workplace support, rehabilitation, family support, education, and rights awareness were important employment-related resources.

The results show that stroke survivors in the sample were highly employment-connected, but this finding should be interpreted cautiously because it likely reflects sample composition. The dataset may have overrepresented stroke survivors who had already returned to work or were reachable through employment-related networks. Therefore, the study does not claim that stroke status itself causes higher employment. Instead, the findings highlight the importance of structured support systems for those who are attempting to remain in or re-enter work.

The strongest reliable support index was workplace and self-advocacy support. This confirms that inclusive employment is not only a matter of individual recovery but also depends on the accessibility and responsiveness of the workplace. Supervisor support, coworker attitudes, accommodation, workplace access, disclosure, and self-advocacy are central to successful inclusion.

The study also concludes that Sri Lanka's disability employment environment requires stronger implementation of existing disability rights and accessibility frameworks. Informal family and peer support appear strong, but formal systems such as vocational rehabilitation, rights awareness, and workplace accommodation procedures remain limited. A rights-based and rehabilitation-linked employment pathway is therefore needed.

First, Sri Lanka should develop a structured return-to-work pathway for stroke survivors and other persons who acquire disabilities during working age. This pathway should begin during rehabilitation and include work-readiness assessment, job-demand analysis, employer liaison, reasonable accommodation planning, and follow-up after return to work.

Second, employers should be required and supported to implement reasonable accommodation procedures. This should include confidential disclosure systems, formal accommodation request processes, flexible schedules, modified duties, accessible workspaces, assistive technology, and phased return-to-work options.

Third, vocational rehabilitation services should be expanded. The low prevalence of vocational rehabilitation in the data indicates a major service gap. Vocational support should include job coaching, skills retraining, career counselling, employer matching, supported employment, and entrepreneurship support for people who cannot return to previous employment.

Fourth, workplace disability inclusion training should be introduced for supervisors, human resource officers, and coworkers. Since Factor 1 was driven by supervisor support and coworker attitudes, workplace culture is a key intervention point. Training should focus on stroke awareness, communication support, stigma reduction, reasonable accommodation, and inclusive performance management.

Fifth, national and workplace-level rights awareness should be strengthened. Workers with disabilities should receive accessible information about employment rights, reasonable accommodation, grievance processes, and available rehabilitation or vocational services. Employers should also receive clear guidance on their legal and ethical obligations.

Sixth, the public and private sectors should strengthen monitoring of disability inclusion. Employment data should be disaggregated by disability type, gender, age, education, district, severity, and employment sector. This will allow policy makers to track whether inclusion initiatives are reaching stroke survivors and other persons with disabilities.

Seventh, Sri Lanka should align employment reforms with the UNCRPD by moving from a charity or welfare model to a rights-based model. This requires enforcement, accountability, accommodation, and participation of persons with disabilities in policy design.

Suggestions for Further Research

Future research should use a larger and more representative sample, especially including more unemployed stroke survivors. The present sample included only three not-employed stroke respondents, which limited the ability to model employment outcomes without bias.

Longitudinal research is also needed. Cross-sectional data cannot determine whether support systems lead to employment or whether employed respondents simply have more access to support. Future studies should follow stroke survivors from rehabilitation through return-to-work and job retention over time.

Qualitative research should be conducted with stroke survivors, employers, supervisors, rehabilitation professionals, and family members. Interviews would help explain how barriers operate in practice, why formal vocational rehabilitation is low, and how disclosure and accommodation decisions are negotiated.

Future studies should also examine institutional-level data, such as whether workplaces have disability inclusion policies, HR procedures, accessible infrastructure, return-to-work programmes, or disability focal points. Such data would allow multilevel modelling of individual and institutional predictors of employment inclusion.

Finally, further psychometric validation of the support indices is needed. Factor 1 and Factor 5 showed strong reliability, but the remaining factors had weak reliability. Future research should refine the measurement tool, improve item wording, and test factor structure in a larger sample.

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Annexure 1: Variable Measurements

- Employment Status: Assessed by asking, "Are you currently working (paid job or self-employed)? If yes, is it full-time or part-time?" Responses are categorized for analysis as Employed (full/part-time) vs Unemployed (including retired, not seeking work).
- Support Index: Individual survey items (e.g. "My employer provides wheelchair access," "There is a job coach available if needed") use 5-point Likert scales. These items are factor-analyzed; the resulting factor scores (standardized) are used as continuous predictors. Higher scores indicate more institutional support.
- Barrier Index: Similar approach: items (e.g. "It's difficult to get to work due to transport," "Some coworkers discriminate against me") are analyzed to form one or more barrier factors. Scores indicate higher perceived barrier levels.
- Stroke vs. Other Disability: Participants indicate diagnosis; coded for subgroup analyses.
- Covariates: Standard demographic questions (age, gender, education) and a household assets checklist (for SES index) follow national survey conventions (e.g. Sri Lanka DHS). Disability severity is measured using the Barthel Index (e.g. 0–100 scale) or Modified Rankin, administered by interviewer observation or self-report if available.