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Return to work for adults following stroke: a scoping review of interventions, factors, barriers, and facilitators.

COUTTS, E. and COOPER, K.

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1 **Interventions, barriers, and facilitators associated with return to work for adults following a**
2 **stroke: a scoping review**

3 **Abstract**

4 **Objective:** This scoping review aimed to map the literature on interventions, barriers, and facilitators
5 for return to work for adults post-stroke with and without communication disorders.

6 **Introduction:** Difficulties in returning to work can significantly impact individuals following a stroke
7 (eg, their sense of purpose and self-esteem), not only financially, but also as they adjust to the
8 change in their situation. Such difficulties may arise from communication disorders as well as physical
9 impairments. Previous reviews on return to work post-stroke have focused on specific aspects, such
10 as interventions, or barriers and facilitators, but have not provided a comprehensive map of the field.
11 Further, no systematic or scoping reviews to date have focused on literature addressing return to
12 work for people with communication disorders post-stroke.

13 **Inclusion criteria:** This review considered literature that reported on interventions, barriers, and
14 facilitators for return to work for adults (aged 16 and over) following an ischemic or hemorrhagic
15 stroke. Records focusing on transient ischemic attacks or acquired brain injury were excluded, as
16 were those in which a comorbidity or disability (eg, learning disability, dementia, respiratory disorder)
17 had a significant impact on the individual's ability to work.

18 **Methods:** This review followed the JBI scoping review methodology. Primary research of any type,
19 systematic and non-systematic reviews, and gray literature from developed countries written in
20 English from 2010 to the present day were identified from 7 databases, 2 gray literature repositories,
21 *JBI Evidence Synthesis*, and an internet search. Records were screened for relevance to the review
22 topic by 2 independent reviewers and data relevant to the review questions were extracted. Findings
23 were presented as a narrative supported by tables.

24 **Results:** One hundred and six records were included, 61 of which addressed demographic-,
25 socioeconomic-, impairment- and recovery-based factors associated with return to work. One of these
26 61 records, a narrative review focused on communication disorders. Thirty-eight records explored
27 barriers and facilitators for return to work from different stakeholders' perspectives; 3 of these 38
28 records, including 2 qualitative studies and 1 narrative review, focused on post-stroke communication
29 disorders. Eleven records focused on interventions, including 7 studies (reported across 9 records)
30 that developed or tested return-to-work interventions. Of these primary studies, 1 randomized
31 controlled trial and 1 retrospective cohort study was identified. The remaining intervention studies
32 were case studies or case series. None of these intervention studies addressed communication
33 disorders.

34 **Conclusions:** While there has been extensive research on factors, barriers, and facilitators for return
35 to work post-stroke, there is a lack of research on interventions to facilitate return to work. There is

36 also a significant gap in the evidence-base on returning to work with a post-stroke communication
37 disorder, highlighting the need for further research in this important area.

38 **Keywords:** aphasia; dysarthria; return to work; speech disorders; stroke

39 **Abstract word count:** 453

40 **Introduction**

41 The socioeconomic burden of stroke is well recognized. In 2016, there were 80.1 million stroke
42 survivors and 13.7 million new strokes worldwide, giving rise to 116.4 million disability adjusted life
43 years.¹ Approximately a quarter of stroke survivors are of working age,² and while estimates of return-
44 to-work rates following stroke vary considerably, ranging from around 11% to 85%,³ it has been
45 estimated that over 9 million work days are lost in the UK alone each year because of stroke, with
46 26% of the total annual cost of stroke being due to loss of productivity.⁴

47
48 In addition to the economic cost, being out of the workplace due to disability has major psychosocial
49 costs for the individual, causing reduced social capital, sense of purpose, quality of life, and standard
50 of living.^{5,6} Return to work, referring here to a return to paid employment in the form of a previous job,
51 a previous job in modified form, or a new job, including both part-time and full-time work⁷ following
52 illness or injury is an important factor in reducing these economic, social, and personal
53 consequences.⁸ Indeed, returning to work can “enhance recovery, self-esteem, confidence, social
54 identity and overall quality of life.”^{9(p.953)} Its importance is such that the need to promote vocational
55 rehabilitation (which has been defined as a process where those disadvantaged by illness or disability
56 are enabled to access, maintain, or return to employment or other useful occupation)² is enshrined in
57 the United Nations Convention on the Rights of Persons with Disabilities.¹⁰ Vocational rehabilitation
58 needs to be supported by a strong evidence base in order to inform policy and the commissioning of
59 health care services.¹¹ It is, therefore, disappointing that, despite improvements in stroke rehabilitation
60 and medical treatments, a recent Japanese study found no significant improvement in return-to-work
61 rates over 2 decades.¹²

62
63 Difficulties with returning to work following stroke arise from not only from physical impairments, such
64 as mobility problems or reduced upper-limb movement, but also from “invisible” difficulties, such as
65 those related to cognition or mood.¹³ Communication disorders resulting from a stroke are also very
66 common: a recent study found that 64% of inpatients at 3 days post-stroke had a communication
67 disorder, with 28% having both aphasia and dysarthria, 24% having dysarthria alone, and 12% having
68 aphasia alone.¹⁴ Because of the importance of communication in work activities, such impairments
69 can cause considerable barriers to return to work.¹⁵ One review found that the return-to-work rate for
70 people with post-stroke aphasia averaged 28% across the included studies, a significantly lower rate
71 than that for the general population of working-age stroke survivors, which was 45%.⁹

72

73 The extent of the issues outlined here demonstrates the importance of evidence-based interventions
74 supporting people to return to work post-stroke. There is a diverse body of literature on the topic.
75 Quantitative primary research studies evaluating return-to-work interventions range from those that
76 investigate specific impairment-based therapies (eg, the use of technological devices to improve
77 motor function through audio or visual feedback¹⁶) to those that evaluate holistic vocational
78 rehabilitation programs (eg, programs comprising physical rehabilitation, psychological support,
79 employment support, and caregiver support.¹⁷) Other quantitative studies have investigated factors
80 affecting return to work. Among these studies, some focus on specific factors, such as pre-stroke
81 socioeconomic status¹⁸ or the presence of post-stroke fatigue,¹⁹ while others cover a wide range of
82 factors from demographic/socioeconomic to those based in the nature and severity of the stroke.²⁰ A
83 further body of literature comprises qualitative studies exploring barriers and facilitators affecting
84 return to work from the perspectives of different stakeholders, including stroke survivors, health care
85 professionals, employers, and coworkers.^(eg,21,22) The barriers and facilitators discussed include those
86 relating to personal circumstances and the impact of impairments,^(eg,23,24) the provision and
87 coordination of rehabilitation services,^(eg,21,25) and support from employers and/or coworkers.^(eg,22,24)
88 In the last 10 years, systematic reviews have been carried out examining some specific aspects of
89 return to work post-stroke; for example, on operational definitions and rates of return to work,²⁶
90 interventions,²⁷ barriers and facilitators,^{28,29} frequency and predictors,⁷ and the effectiveness of
91 rehabilitation.^{30,31} A recent scoping review conducted by Green et al.³² explored how return to work
92 has been defined and measured in the literature, the type of research that has been conducted, and
93 the characteristics of people who do and do not return to work. The secondary objective of that review
94 was to understand the efficacy of return-to-work interventions and which professionals were involved
95 in their delivery. The scoping review by Green et al.³² intended to provide a select group of health
96 care professionals (nurses) with an understanding of the existing quantitative evidence on return to
97 work. The scoping review reported here is intended to inform a wide range of professional groups and
98 includes a broad range of literature types; it therefore builds on the review by Green et al. and
99 provides a comprehensive and up-to-date map of the field.

100

101 Apart from the scoping review by Green et al. and the systematic reviews on specific aspects of return
102 to work discussed previously, a preliminary search of PROSPERO, MEDLINE, CINAHL, *JBI Evidence*
103 *Synthesis*, and Open Science Framework identified no planned or in-progress systematic or scoping
104 reviews examining interventions, factors, barriers, and/or facilitators to return to work in adults
105 following stroke.

106

107 This scoping review is the initial step in a program of research to design an intervention to support
108 return to work for people with post-stroke communication disorders. In order to inform this design, the
109 literature on post-stroke return to work in general and also specific to communication disorders was
110 identified and examined.

111 **Review questions**

- 112 i) What interventions for return to work for adults following a stroke have been reported in the
113 literature and what outcomes have been reported?
- 114 ii) What interventions for return to work for adults with post-stroke communication disorders
115 have been reported in the literature and what outcomes have been reported?
- 116 iii) What factors (eg, sociodemographic variables, symptom severity, access to services),
117 barriers, and facilitators are reported in the literature on return to work for adults following a
118 stroke?
- 119 iv) What factors, barriers, and facilitators are reported in the literature on return to work for adults
120 with post-stroke communication disorders?

121 **Inclusion criteria**

122 ***Participants:***

123 The review considered literature including adults (aged 16 years and older) who had an ischemic or
124 hemorrhagic stroke. The lower age limit was 16 as this is the minimum school-leaving age in the UK,
125 where the review was conducted and where the findings will be utilized. Records focusing on transient
126 ischemic attacks or acquired brain injury were excluded, as were those in which a comorbidity or
127 disability (eg, learning disability, dementia, respiratory disorder) had a significant impact on the
128 individual's ability to work.

129 ***Concept:***

130 The review considered all literature pertaining to return to work following a stroke, including
131 explorations or descriptions of non-medical interventional approaches, as well as the factors (eg,
132 socioeconomic variables, symptom severity, access to services) reported to be associated with good
133 or poor return-to-work outcomes, and the barriers and facilitators (as experienced by all relevant
134 stakeholders, including stroke survivors, health care professionals, and employers) influencing return
135 to work.

136 ***Context:***

137 The review considered literature from developed countries, defined as those rated as having Very
138 High Human Development in the Human Development Index.³³ This is because the scoping review
139 will inform a research program in the UK, and findings from these countries are more likely to be
140 transferable to the UK context. Literature covering all settings (hospitals, rehabilitation settings, and
141 community) within these countries was considered.

142 ***Types of sources***

143 Primary research of any type (quantitative, qualitative, or mixed methods) was considered for
144 inclusion, as was any type of review. In order to create a comprehensive map of the topic, gray

145 literature, such as governmental and professional guidelines and publications produced by charitable
146 organizations, were also considered. Conference abstracts, protocols, and trial registrations were
147 excluded.

148 **Methods**

149 The review was conducted in accordance with JBI methodology for scoping reviews³⁴ and an a priori
150 published protocol.³⁵ The findings are reported in accordance with the Preferred Reporting Items for
151 Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).³⁶

152 **Search strategy**

153 The search strategy aimed to locate both published and unpublished literature. An initial limited
154 search of MEDLINE (Ovid) and CINAHL (EBSCOhost) was undertaken to identify articles on the topic
155 using the keywords “stroke,” “aphasia,” “dysarthria,” “employment,” and “vocational rehabilitation.”
156 The index terms and text words contained in the titles and abstracts of relevant records were used to
157 develop a full search strategy. The search strategy was applied to each included database with
158 keywords and index terms adapted accordingly. MEDLINE (Ovid), Embase (Ovid), AMED (Ovid),
159 CINAHL (EBSCOhost), *JBI Evidence Synthesis*, Cochrane Library (controlled trials and systematic
160 reviews), PEDRo, and OTseeker were searched. The search strategies for each of these databases
161 are presented in Appendix I.

162 The search for gray literature or unpublished studies was conducted using OpenGrey and ProQuest
163 Dissertations and Theses. A search was also conducted of the World Health Organization and World
164 Stroke Organization websites, and the government health departments of the 9 majority English-
165 speaking countries (Australia, Canada, England, New Zealand, Northern Ireland, Republic of Ireland,
166 Scotland, United States of America, Wales). In addition, a search was conducted of the websites of
167 these countries’ stroke-related charitable bodies (eg, American Stroke Association; Stroke Foundation
168 NZ) and professional bodies of the key health professions involved in return to work (occupational
169 therapy, physiotherapy, and speech and language therapy), including Occupational Therapy
170 Australia, Canadian Physiotherapy Association, and the Royal College of Speech and Language
171 Therapists (UK). The reference lists of all included records were screened for additional relevant
172 literature. This manual search identified 6 records on subarachnoid hemorrhage, which had not been
173 used as an original search term. We, therefore, conducted an additional search using subarachnoid
174 hemorrhage or aneurysmal arachnoid hemorrhage as keywords; the search did not identify any
175 further relevant records. The search detailed above was conducted in December 2020 and updated in
176 January 2022.

177 Records published from 2010 to the present day were eligible for inclusion. Although there is literature
178 on this topic before 2010, there was a substantial increase in studies after this date. Therefore, the
179 most contemporary literature was included. The review was also limited to studies published in
180 English because the review team did not have the resources for translation services.

181 **Study selection**

182 Following the search, all identified citations were uploaded into RefWorks (ProQuest LLC, Ann Arbor,
183 USA) and duplicates removed. Remaining citations were exported to Covidence (Veritas Health
184 Innovation, Melbourne, Australia) for screening, with additional duplicates identified and removed on
185 import to Covidence. Titles and abstracts were screened by 2 independent reviewers for inclusion and
186 conflicts were resolved by discussion. Full texts of potentially relevant studies were retrieved and
187 assessed in detail against the inclusion criteria by the 2 independent reviewers, again with conflicts
188 being resolved by discussion. In the case of the gray literature search and the items that were
189 identified from manual searches, EC conducted the searches, and EC and KC subsequently screened
190 potentially eligible records against the inclusion/exclusion criteria. Reasons for exclusion of full-text
191 studies were recorded and reported in supplementary material for this review: <link>.

192 **Data extraction**

193 As presented in the scoping review protocol,³⁵ a data extraction tool was developed by the reviewers
194 to collate information relevant to the review questions. It included country and year of study,
195 population, focus (eg, intervention; barriers and facilitators; factors), type of research, aims, study
196 design, and details of interventions/barriers and facilitators/factors. Data extraction was piloted on
197 10% of included records, with each reviewer independently extracting data followed by comparison
198 and discussion. This process resulted in some amendments being made to the data extraction tool,
199 as presented in Appendix II. There was a high level of agreement between the 2 reviewers (ie, very
200 few conflicts); therefore, the remaining data extraction was conducted by EC with regular review and
201 discussion with KC.

202 **Data analysis and presentation**

203 The characteristics of the included studies were analyzed and organized in tabular form,
204 accompanied by narrative descriptions. In a deviation from the protocol³⁵, relational analysis was not
205 used to describe and present the findings because, on inspection of the included literature, it was not
206 deemed helpful to attempt to conceptualize relationships between interventions, factors, barriers, and
207 facilitators. Instead, the findings for interventions were summarized in tabular form and explored in a
208 narrative description and the findings for factors, barriers, and facilitators were organized using
209 content analysis, with reviews being reported separately in order to avoid double-counting.

210 **Results**

211 Database searches resulted in 6169 citations. After removing duplicates, 6111 citations remained for
212 assessment against the inclusion criteria. After screening titles and abstracts, 5799 citations were
213 removed as not being relevant to the current review. 312 citations remained for full-text review. We
214 were unable to locate 7 of these, therefore 305 records underwent full-text screening. Of these, 111
215 records were excluded, the most frequent reasons being that the concept or participant population

216 was ineligible (n = 123 and n = 30 respectively), or that the record was a conference abstract (n = 51).
217 Other reasons for exclusion were that the record did not originate from a country within the highest
218 Human Development Index rating (n = 5); the record detailed a trial or protocol (n = 1 or it reported on
219 data duplicated from an included paper (n = 1). A further 8 citations were identified by hand-searching
220 reference lists of included studies, of which we were unable to retrieve 1 record. The gray literature
221 search identified 19 citations. Of these records, 8 were excluded as the participant population was
222 ineligible and 6 because the concept was ineligible. In total, following full-text screening, 106 records
223 were included in the final review. The search results, selection and inclusion process is detailed in the
224 PRISMA flow diagram (Figure 1), and the full table of included records is presented in Appendix III.
225 Excluded records, with reasons for exclusion, are included as a supplemental file, as are the 8
226 citations that we were unable to locate, as they were not available from either of the reviewers'
227 institutional libraries, and requests for access (where appropriate) were not responded to by authors.

228

229 <Figure 1 about here>

230

231 **Study inclusion**

232 As illustrated in Figure 2, there has been a general increase in the number of records published since
233 2010, with more than 60% of records published since 2016, with 2019 and 2020 the 2 years that have
234 seen the highest numbers. There was 1 record (a patient information leaflet) in which the year of
235 publication was not stated.

236

237 <Figure 2 about here>

238 **Characteristics of included studies**

239 The 106 records originated from 19 countries. Sweden was the country of origin of the highest
240 number (n = 22), followed by the USA (n = 19), UK (n = 13), and Japan (n = 8). The full breakdown by
241 country of origin is presented in Figure 3.

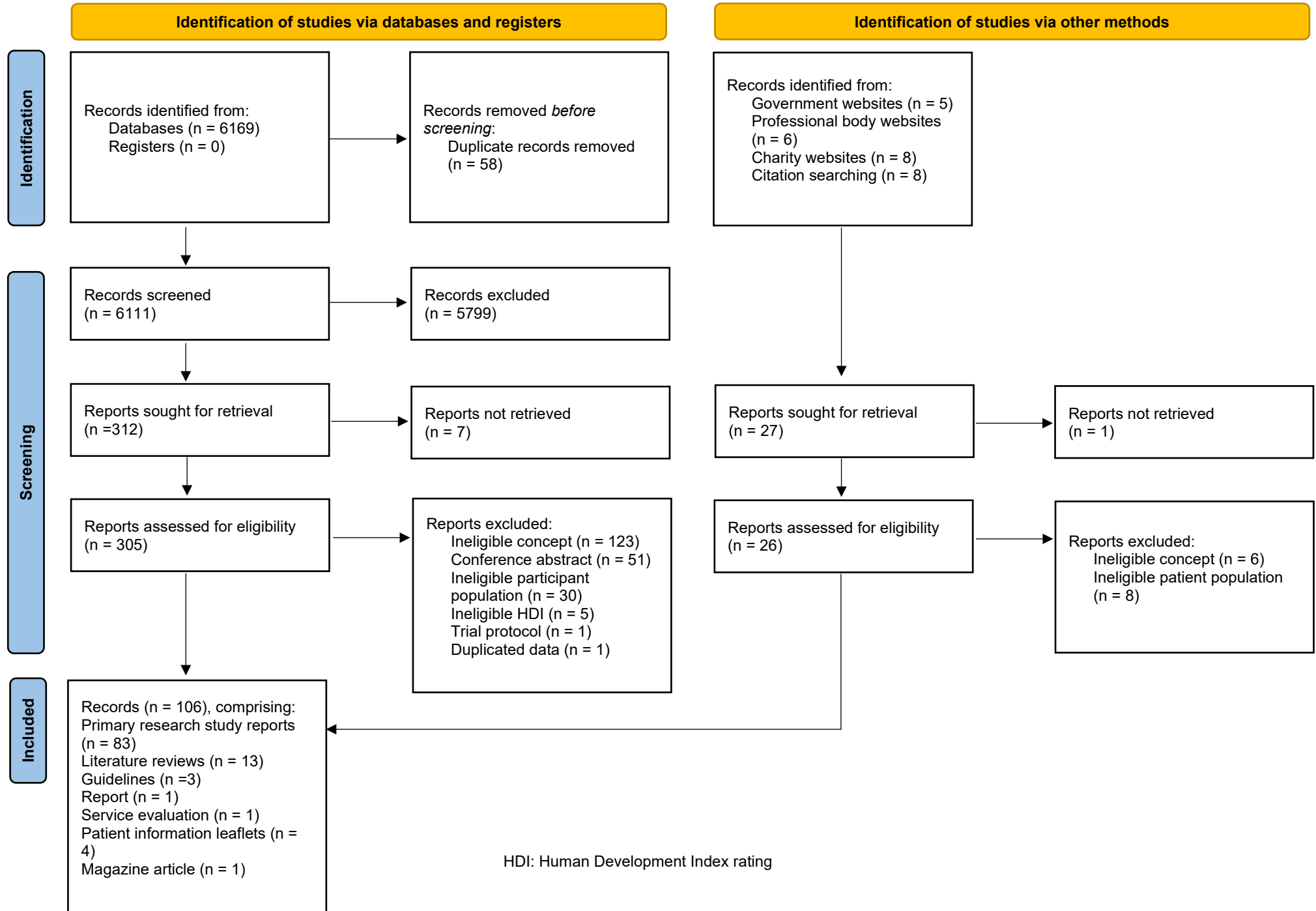
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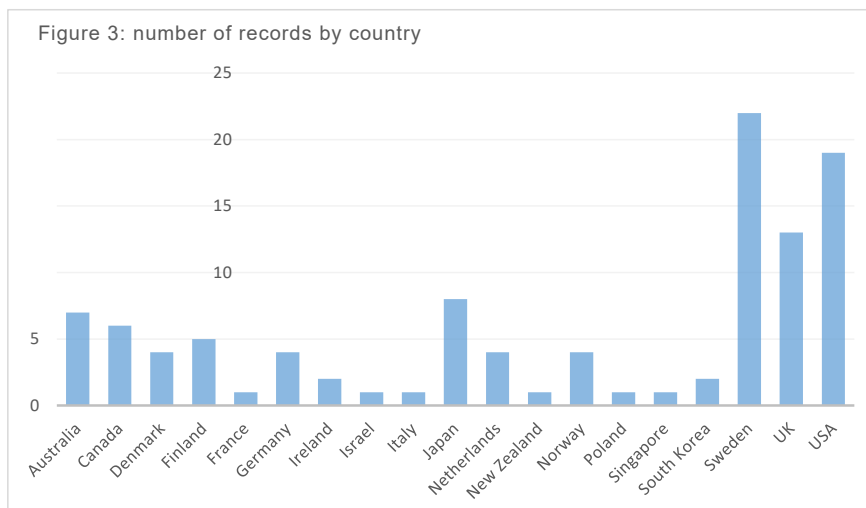
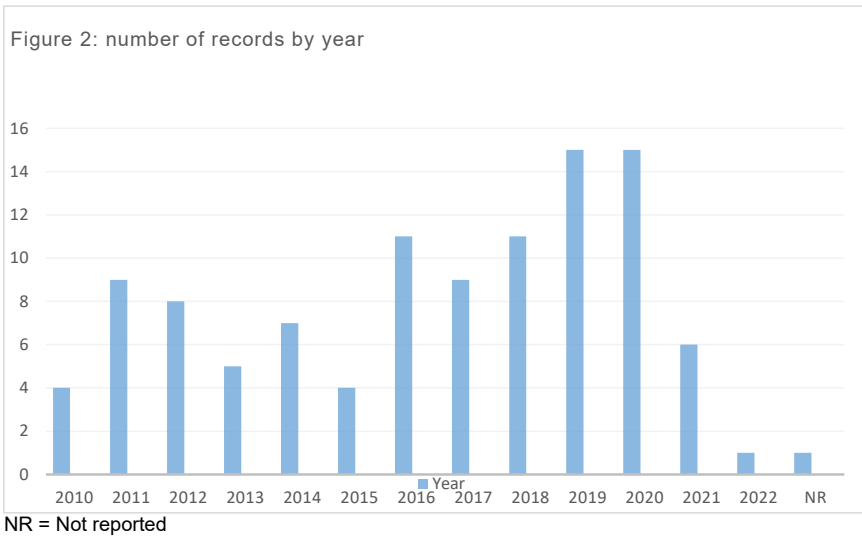
243 (Figure 3 about here)

244

245 The 106 included records included 1 scoping review,³² which reported on how return to work is
246 defined and what types of studies on return to work have been conducted, as well as interventions for
247 and factors influencing return to work. There were also 5 systematic reviews: one explored the effect
248 of vocational rehabilitation on return-to-work rates,³⁰ while another explored the frequency of return to
249 work rates at different time-points and the predictors of return to work.⁷ Two systematic reviews
250 examined qualitative studies on barriers and facilitators affecting return to work,^{28,29} while a further
251 systematic review explored return to work in the context of the impact of cognitive deficits following
252 aneurysmal subarachnoid hemorrhage.³⁸ There were 8 narrative reviews, 2 of which reported on
253 factors affecting return to work,^{39,40} and 3 of which covered factors, barriers, and facilitators.⁴¹⁻⁴³ A

Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart of records selection process³⁷





254 further narrative review explored psychosocial outcomes and work capacity for survivors of
255 aneurysmal subarachnoid hemorrhage.⁴⁴ One narrative review addressed return-to-work rates for
256 stroke survivors with and without aphasia, as well as types of assessment and definitions of work
257 used in studies, and factors such as the age of study participants.⁹ A further record discussing a
258 framework to support people with aphasia to return to work included a narrative description on
259 relevant barriers and facilitators.⁴⁵

260
261 Also included was 1 service evaluation of a return-to-work program that discussed barriers and
262 facilitators from the perspectives of stroke survivors and service providers,⁴⁶ and 1 report from a
263 symposium in which stroke survivors and experts in vocational rehabilitation and employment
264 services discussed rates of return to work, the experiences of stroke survivors, and the impact of
265 support and workplace adaptations.⁴⁷ Three guidelines were included, of which 2 were on best
266 practice for stroke,^{48,49} and 1 was a position paper.⁵⁰ All three guidelines included sections on how
267 services should facilitate return to work. Finally, 4 patient information leaflets⁵¹⁻⁵⁴ and 1 magazine
268 article⁵⁵ were included, all discussing barriers and facilitators affecting return to work from the
269 perspectives of stroke survivors.

270
271 Eighty-two records on primary research studies were included in the review. Of these, there were 9
272 records on intervention studies and 51 records on factors including demographic and socioeconomic
273 variables,^(eg,56,57) level and type of post-stroke disability,^(eg,19,20) and length of hospitalization and/or
274 rehabilitation.^(eg,58,59) One record reported on an intervention study and also noted factors affecting
275 return to work.¹⁶ In addition, 22 records reported on barriers and facilitators either purely from the
276 perspectives of stroke survivors^(eg,25,60); or of coworkers or employers²²; or from a range of
277 stakeholders, including stroke survivors, employers and healthcare professionals.^(eg,21,61) An additional
278 paper reported solely on barriers to returning to work as experienced by 1 stroke survivor.⁶²

279 **Review findings**

280 ***j) What interventions for return to work for adults following a stroke have been reported*** 281 ***in the literature and what outcomes have been reported?***

282 One systematic review,³⁰ 1 scoping review,³² and 9 reports from 7 primary studies^{16,17,63-69} explored
283 return-to-work interventions. Three records from the same study are included here, 1 of which
284 described the development of a return-to-work program,⁶³ 1 reported on the “first try-out”^(p.1) of the
285 program,⁶⁴ and the third reported on the reflections of the professionals who carried out the
286 intervention.⁶⁵

287 The systematic review explored the effect of vocational rehabilitation programs on rates of return to
288 work post-stroke,³⁰ and included 6 studies dating from 1990 to 2008 (none were eligible for inclusion
289 in the current review). All 6 studies were retrospective cohort designs. The review found that each
290 study reported on a vocational rehabilitation program, but these varied considerably in terms of the

291 detail provided around the components of the programs. All reported the rate of return to work as the
292 primary outcome measure, but there was inconsistency in how return to work was defined. The
293 scoping review reported on interventions that were successful, their efficacy, and who delivered
294 them.³² Seven studies were included, 1 of which was on a medical intervention and, therefore, not
295 eligible for the current review; the remainder were described as psychological, social, or vocational
296 interventions. The review authors point out that, in many cases, the interventions were part of a
297 general rehabilitation program rather than a program aimed solely at return to work. They did not,
298 therefore, identify specific strategies related to return to work. Both reviews concluded that more high-
299 quality interventional studies were needed on this topic.

300 Among the 7 primary studies that described return-to-work interventions, 2 described specific
301 impairment-based interventions: 1 explored technological rehabilitation using wearable and/or optic
302 assistive devices,¹⁶ and the other explored visual/perceptual training.⁶⁷ The remaining 5 intervention
303 studies described vocational rehabilitation or work support programs^{17,63-65,66,68,69} consisting of
304 components such as detailed assessments of the person's functional abilities and work
305 environment^{17,66,69}; individualized physical rehabilitation¹⁷; identification of strategies and support
306 needs^{17,63-66,68}; liaison with the person's employer^{17,63-65,68-69}; provision of assistive technology or
307 equipment^{17,69}; and work trials either in the person's actual work place^{63-65,68} or in a volunteer
308 placement designed to replicate the work setting.⁶⁶ Only 1 of the intervention studies was a
309 randomized controlled trial,¹⁶ while 1 was a retrospective cohort study.¹⁷ The remaining 5 studies
310 were case studies⁶⁹ or case series (with the number of participants ranging from 2 to 10).^{64,66-68} Details
311 of the interventions are presented below in table 1.

312
313 (Table 1 about here)

314
315 Across the 7 primary studies, there were 7 different outcome domains used to evaluate return-to-work
316 interventions, using 12 different outcome measures. The domains included whether or not the
317 participant returned to work (measured by a binary "yes" or "no"),⁶⁶⁻⁶⁹ the rate of return to work
318 (measured by either the number¹⁶ or percentage¹⁷ of participants); the level of return to work
319 (measured by the number of working hours returned to^{16,67,68} or the percentage of pre-stroke working
320 hours returned to⁶⁴), and post-stroke role (measured by whether this was the same or different as the
321 pre-stroke role⁶⁷). A further domain reported was the rate of return to work with adaptations of
322 assistive devices, measured by the number of participants requiring these supports.¹⁶ The outcome
323 domain of work performance was also used, measured in 1 study by analysis and interview⁶⁹ and in
324 another study by standardized assessment.⁶³⁻⁶⁵ This latter study was the only one to use the outcome
325 of work capacity, again measured by standardized assessment.⁶³⁻⁶⁵ These findings are recorded in
326 Table 2.

327
328 (Table 2 about here)

329

Table 1: details of intervention studies

First Author (ref)	Intervention	Intensity/duration	Setting	Professionals involved
Ghanbari Ghoshchi (16)	Technological rehabilitation with wearable (Riablo™) and/or optic (SonicHand) assistive devices providing auditory and visual biofeedback	2x neuromotor rehabilitation session + 1x speech/respiratory/phoniatic session (each session = 40 minutes) 3 days a week for 1 month	Day hospital	NR
Bin Zainal (17)	Transitional to Employment (TTE) program: pilot community-based interdisciplinary vocational rehabilitation program including physical rehabilitation; psychosocial support; employment support; caregiver support services	Individualized. Mean duration = 10 month, range 7-14 months	Community-based voluntary welfare organization	OT; PT; social workers; employment support specialists
Johansson (63) + Öst Nilsson (64) + Johansson (65)	Return to work rehabilitation program (ReWork-Stroke): preparation phase (discussion with participants and stakeholders; development of plan for work trial); work trial phase (support, advice and solutions provided in the workplace)	Preparation phase: individualized (from inclusion to start of work trial, range 2 – 8.5 months) Work trial: 3 months	Workplace	OT
Saito (66)	Support from in-hospital volunteer circle to improve cognitive/physical functions; support from vocational	NR	Hospital; community; workplace	Staff in medical institutions (not further defined);

	rehabilitation centre (e.g. evaluations, work trials, meetings with workplace)			Work support agencies (vocational rehabilitation center)
Kerkhoff (67)	Specific, successive neuropsychological therapy in four domains: eye movement training; anti-extinction training; spatial-perceptual feedback training; job-related visual/cognitive training	Individualized: 72.5 hours -116 hours over 251 - 482 days	Outpatient hospital/clinic	NR
Owensworth (68)	Metacognitive contextual approach: executive strategy training & enhancement of social contextual factors in RTW process.	16x 3 hour preparation sessions + 1x 3 hour work trial	Community; workplace	OT; neuropsychologist
Tani (69)	Negotiation of work-place adjustments (working hours; site; equipment) & developing tailor-made support equipment	Multiple visits to hospital + 3 workplace visits over 17 month period.	Hospital; workplace	Staff at occupational health support center (not further defined); hospital staff (e.g. physicians, nurses, PT, OT, medical social workers); workplace support staff

Key:

NR = Not reported

OT = Occupational Therapists

PT = Physiotherapists

RTW = Return to work

Table 2: details of outcome domains and measures reported in intervention studies

First Author (ref)	Outcome domain	Outcome measure
Ghanbari Ghoshchi (16)	<ul style="list-style-type: none"> • Rate of RTW • Level of RTW • Rate of RTW with organizational or physical adaptations 	<ul style="list-style-type: none"> • No. participants who RTW • No. working hours • No. participants who RTW with organizational or physical adaptations
Bin Zainal (17)	<ul style="list-style-type: none"> • Rate of RTW 	<ul style="list-style-type: none"> • % of participants who RTW
Johansson (63) + Öst Nilsson (64) + Johansson (65)	<ul style="list-style-type: none"> • Level of RTW • Work potential • Work performance 	<ul style="list-style-type: none"> • % of pre-stroke working hours returned to • Worker Role Interview (WRI) • Assessment of Work Performance (AWP)
Saito (66)	<ul style="list-style-type: none"> • Whether participants RTW 	<ul style="list-style-type: none"> • Yes/no
Kerkhoff (67)	<ul style="list-style-type: none"> • Whether participants RTW • Post-stroke role • Level of RTW 	<ul style="list-style-type: none"> • Yes/no • Whether same or different as pre-stroke • No. working hours
Owensworth (68)	<ul style="list-style-type: none"> • Whether participants RTW • Level of RTW 	<ul style="list-style-type: none"> • Yes/no • No. working hours; whether full time/part time
Tani (69)	<ul style="list-style-type: none"> • Whether participant RTW • Work performance 	<ul style="list-style-type: none"> • Yes/no • On-site task analysis; interview

Key:

NA = Not applicable

RTW = Return to work

330 It should be noted that studies frequently included outcomes that were not directly relevant to return to
331 work (eg, physical disability; satisfaction with assistive technology¹⁶; community reintegration¹⁷;
332 outcomes specific to visuospatial deficits⁶⁷). Such outcomes have not been reported here because
333 they are not relevant to the review question. We originally intended to report on which outcome
334 domains and tools had been used as primary and secondary measures in included studies³⁴;
335 however, in most cases, the primary outcome was not stated. Therefore, we have reported any
336 domains and/or tools related to return to work.

337

338 It is also noteworthy that only 1 study⁶³⁻⁶⁵ used validated tools: the Assessment of Work Performance
339 (AWP)⁷⁰ to assess the individual's work-related skills, and the Worker Role Interview (WRI)⁷¹ to
340 identify psychosocial and environmental factors affecting an individual's ability to return to work.

341

342 ***ii) What interventions for return to work for adults with post-stroke communication***
343 ***disorders have been reported in the literature and what outcomes have been reported?***

344 No records that reported on an intervention specific to or highlighting applicability to people with
345 communication disorders were found.

346 ***iii) What factors (eg, sociodemographic variables, symptom severity, access to***
347 ***services), barriers, and facilitators are reported in the literature on return to work for***
348 ***adults following a stroke?***

349 It should be noted that “factors” refers to variables found in quantitative research studies
350 associated with good or poor return-to-work outcomes, while barriers and facilitators are those
351 perceived by relevant stakeholders (eg, stroke survivors, health care professionals, employers),
352 for instance in the context of qualitative research, opinion pieces, guidelines, or patient
353 information leaflets.

354 ***Factors***

355 One scoping review,³² 2 systematic reviews,^{7,38} and 7 narrative reviews^{9,39-44} reporting on factors for
356 return to work were included. The scoping review reported demographic/socioeconomic factors (such
357 as age and gender) and medical/impairment-based factors (such as functional ability post-stroke).³²
358 Both the systematic reviews focused on medical/impairment-based factors,^{7,38} 1 being specific to
359 aneurysmal subarachnoid hemorrhage.³⁸ Of the 7 narrative reviews, 4 reported on
360 demographic/socioeconomic factors, medical/impairment-based factors, and factors associated with
361 post-stroke recovery (such as length of hospitalization and access to rehabilitation).³⁹⁻⁴² Two further
362 studies reported only on demographic/socioeconomic factors and medical/impairment-based
363 factors^{9,43} and 1 study (which was specific to aneurysmal subarachnoid hemorrhage) reported only
364 medical/impairment-based factors.⁴⁴

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Fifty-one primary research studies addressing factors influencing return to work were included.^{16,18-20,56-59, 72-114} Seven of these studies were specific to subarachnoid hemorrhage.⁷²⁻⁷⁸ A symposium report also discussed factors influencing return to work.⁴⁷ As with the systematic and narrative reviews described previously, factors across these 52 records reporting on primary studies or the symposium were categorized as either demographic/socioeconomic based, medical/impairment-based, or post-stroke recovery based. These are presented in Table 3, grouped by category. Within each category, factors were ranked according to the number of studies in which they were mentioned. The direction of influence on likelihood of return to work was also recorded. Within the demographic/socioeconomic group, younger age and male gender were the most frequently reported factors associated with a positive return-to-work outcome. Within the medical/impairment-based group, the absence and/or lower degree of cognitive/executive function impairment and higher degree of functional independence were the most common factors reported as being associated with a positive return-to-work outcome. Within the post-stroke recovery group, a shorter length of hospitalization and shorter length/lesser intensity of rehabilitation were the factors most frequently reported as being associated with a positive return-to-work outcome.

<Table 3 about here>

Barriers and facilitators

Two meta-syntheses^{28,29} and 4 narrative reviews^{41-43,45} addressing barriers and facilitators were included. One meta-synthesis identified 4 main themes: i) the nature of the effects of the stroke; ii) the preparatory environment; iii) personal coping strategies and internal challenges; and iv) the meaning of work.²⁸ The second meta-synthesis grouped barriers and facilitators into those that relate to the person, the workplace, or rehabilitation services, or the interactions between these 3 stakeholders. Three overarching principles of adaptiveness, purposefulness, and cooperativeness were identified.²⁹

The narrative reviews identified person-related barriers, such as financial disincentives to work^{42,43}; work stress or job demands^{41,43,45}; cognitive, psychological, or physical difficulties^{43,45}; and lack of awareness of sources of support around return to work.⁴⁵ They also identified facilitators such as personal attributes and coping strategies^{41-43,45}; support of family and friends^{42,43}; the value of work^{42,43}; and awareness of rights and financial assistance around return to work.⁴⁵ Additionally barriers and facilitators related to rehabilitation services were identified, such as access to services^{42,43}; (lack of) liaison between health care services, specialist rehabilitation services, and the employer^{41,45}; and the availability of counseling.⁴⁵ Finally, barriers and facilitators related to the employer were identified, such as (lack of) support^{41,43}; (lack of) accommodation for the person's needs^{41,42,43,45}; and legislation to support people with disabilities.⁴³

Table 3: factors influencing return to work post-stroke ranked by number of records in which they are mentioned (N = 52)

Factor	No. records	
Demographic/socioeconomic factors		RTW reported as more likely for:
Age	16	Younger individuals
Gender	11	Men
Level of education	10	Individuals with higher education level
Non-manual (white collar) vs. manual (blue collar) work	7	Non-manual workers
Living arrangements	5	Individuals living with others (partner; children)
Professional/skilled vs. unskilled/elemental workers	3	Professional/skilled workers
Ethnicity	3	Caucasian individuals
General socioeconomic status/income	2	Individuals with higher socioeconomic status/ income
Sick leave prior to stroke	2	Individuals with less sick leave
Having health insurance	2	Individuals with health insurance
Caregiver characteristics	2	Individuals with caregivers who are female, younger, working
Company size	2	Individuals who work for a large company
Employment status	2	Individuals who are employed on discharge/at initial follow-up
Working hours pre stroke	1	Individuals who worked full time pre-stroke
Whether in management role	1	Managers
Whether self employed	1	Individuals who are self-employed
Nationality	1	Individuals born within country of residence
Medical/impairment based factors		RTW reported as more likely for:
Cognitive/executive function impairment	13	Absence/lower degree of cognitive/executive function impairment
Functional dependence	12	Higher degree of functional independence
Anxiety/depression	11	Absence/lower degree of anxiety/depression

Severity of stroke	9	Lower severity of stroke
General degree of neuro disability/spasticity/hemiparesis	8	Lower degree of neuro disability/spasticity/hemiparesis
Presence/severity of communication disorder	6	Absence/lower degree of communication disorder
Self-rated QoL/health/impairment	6	Higher self-rating of QoL/health; lower self-rating of impairment
Fatigue	4	Absence/lower degree of fatigue
Stroke type	3	Infarcts (vs. hemorrhage)
Upper limb function	3	Higher degree of upper limb function
Lower limb function/balance/walking	2	Higher degree of lower limb function/balance/walking
Comorbidity	1	Absence/lower degree of comorbidities
Visual field defect	1	Absence/lower degree of visual field defect
Participation	1	Higher degree of participation
Pain/discomfort	1	Absence/lower degree of pain/discomfort
Cardiovascular fitness	1	Higher degree of cardiovascular fitness
Side of stroke	1	Right (vs. left) hemisphere stroke
Post stroke medical complications (e.g. epilepsy; chronic hydrocephalus)	1	Absence of post stroke medical complications
Post-stroke recovery		RTW reported as more likely for:
Length of hospitalization	4	Shorter length of hospitalization
Length/intensity of rehabilitation	2	Shorter length/lesser intensity of rehabilitation
Access to specific vocational rehabilitation	1	Higher degree of access to specific vocational rehabilitation
Return to driving	1	Successful return to driving

Key: RTW = Return to work

403 In addition, there were 23 primary research studies,^{21-25,60-62,115-129} 1 service evaluation,⁴⁶ 1 report from
404 a symposium,⁴⁷ 3 guidelines,⁴⁸⁻⁵⁰ 4 patient information leaflets,⁵¹⁻⁵⁴ and 1 magazine article⁵⁵ that
405 reported barriers and facilitators. For these 33 records, and following the approach taken in the
406 systematic review by Schwarz et al.,²⁹ barriers and facilitators were categorized by whether they
407 related to the person, rehabilitation services, or the employer, or to the interactions between these 3
408 stakeholders, and then ranked within these groups.

409
410 It should be noted that some items appear both as factors and as barriers or facilitators (namely
411 cognitive issues, fatigue, communication difficulties, and access to rehabilitation). For example,
412 fatigue has been reported as a factor associated with reduced return-to-work rates in 4 quantitative
413 studies,^{19,47,80,102} and also as a barrier impeding return to work in 16 qualitative studies, evaluations, or
414 patient information leaflets.^{21-24,46,51,52,62,118,121-126,128,129}

415 **Barriers**

416 Barriers were grouped and ranked within each group according to the number of records in which
417 they were mentioned (Table 4). For person-related barriers, cognitive impairments and fatigue were
418 most frequently reported. In the group of barriers related to the interaction between the person and
419 the employer, a negative experience of the initial return to work, or a mismatch between stakeholders
420 in the perceived abilities of the person were most cited. In the group of rehabilitation services–related
421 barriers, the most frequently reported barriers were lack of support or advice or even discouragement
422 from professionals, lack of knowledge about return-to-work processes, and lack of access to health
423 care–based rehabilitation. In the interaction between rehabilitation services and the employer,
424 frequent barriers were poor communication and lack of specialist vocational rehabilitation. The
425 employer-related barriers that were most frequently reported were an unsupportive employer,
426 supervisor or colleagues, and lack of adjustment. Two barriers— lack of involvement of the person in
427 negotiations, and consent issues—were mentioned for the interaction between the person,
428 rehabilitation services, and the employer.

429
430 <Table 4 about here>

431 **Facilitators**

432 The facilitators are grouped in a similar way to the barriers (Table 5). In the person-related group,
433 practical coping strategies and financial necessity were the most frequently reported facilitators. In the
434 group related to the interaction between the person and the employer, positive communication and
435 openness, and a good relationship pre-stroke between the person and their employer were most
436 cited. In the group of rehabilitation services–related facilitators, those most frequently reported were
437 provision of information/support, and general or specialist rehabilitation. In the interaction between
438 rehabilitation services and the employer, frequently reported facilitators were access to specialist
439 vocational rehabilitation, and positive/early interactions between rehabilitation services and the
440 employer. The employer-related facilitators that were most frequently reported were work adjustments

Table 4: barriers affecting return to work post-stroke ranked by number of records in which they are mentioned (N = 29)

Barrier	No. records
Person-related:	
Cognitive impairments	18
Fatigue	17*
Anxiety/reduced confidence	12*
Unable to meet job demands	11
Work stress	10
Communication problems	9*
Fear of sharing problems/asking for help/being open when applying for job	9*
Lack of knowledge of RTW process/rights	7
Feelings of being perceived negatively	7
Physical impairments	5
Lack of insight/acceptance	5
Lack of family support/family anxiety	5
Reduced possibility of promotion or job change/issues applying for new job	5
Low motivation/negative feelings towards job	4
Uncertainty about extent of recovery	3
Reduced social integration	3
Financial incentive not to work/financial barriers to new job opportunities	3
Reappraisal of work/life balance/other priorities	3
On-going medical/health problems	1
Person-employer interaction:	
Negative experience of initial RTW (e.g. returning too quickly, more difficult than expected)	10*
Mismatch between employer/colleagues/person perception of abilities/overprotectiveness)	5
Lack of communication between person and employer	4
Supervisor does not know person, no shared history	2
Negative relationship with employer pre stroke	1
Rehabilitation services:	
Lack of support/advice, active discouragement	10
Lack of knowledge re RTW process	3
Lack of/limited access to healthcare-based rehabilitation	3
Poor communication between professionals, lack of shared plan	2
Rehabilitation services/employer interaction:	

Poor communication	9
Lack of VR specialist support (or access to it)	4
Lack of detailed assessment for RTW	1
Employer:	
Unsupportive employer/supervisor:	11*
Unsupportive colleagues	9*
No/limited adjustment	9*
Limited/lack of access/equipment/transport	8*
Limited support from OHS/HR/employment services	5
Employer wants person to leave	4*
Employer uncertainty/concerns	4
Limited employer knowledge of RTW responsibilities	4
Demands of supporting RTW	2
Lack of employer awareness of stroke-related problems (e.g. aphasia)	1*
Discrimination	1
Person/rehabilitation services /employer interaction	
Individual not involved in RTW negotiations	1
Consent issues	1

* Includes record with focus on communication disorders (see below under Question iv)

Key:

HR = Human resources

OHS = Occupational health service

RTW = Return to work

VR = Vocational rehabilitation

441 and having a supportive employer or supervisor. For the interaction between the person, rehabilitation
442 services, and the employer, good negotiation between these stakeholders was cited.

443

444 <Table 5 about here>

445

446 It should also be noted that 2 records included in this section address barriers and facilitators
447 experienced by stroke survivors¹²⁴ and coworkers or managers²² involved in the work trial of a
448 vocational rehabilitation.⁶⁴⁻⁶⁵ The stroke survivors themselves focused on the positive: the benefit of
449 support from a specialist coordinator; good communication between all parties; and feeling of control
450 and power to influence decisions. In contrast, the coworkers or managers focused more on the
451 challenges of supporting someone to return to work; for example the overall demands of providing the
452 support (often with a lack of knowledge of stroke or the return-to-work process), and mismatches
453 between their perceptions and those of the stroke survivor with regards to the stroke survivor's
454 abilities. However, facilitators were also reported: again, support from the coordinator and also the
455 value of a positive working relationship prior to the stroke.

456 ***iv) What factors, barriers and facilitators are reported in the literature on return to work***
457 ***for adults with post-stroke communication disorders?***

458 One narrative review on factors affecting return to work had a specific focus on aphasia.⁹ This review
459 included 9 studies (all pre-2010, therefore not eligible for inclusion in the current review) to examine
460 the rate of successful return to work for individuals with post-stroke aphasia. It also reported on the
461 type of assessments used, definitions of work, the age of study participants, and the follow-up times in
462 the included studies. The review concluded that, despite a wide variation in methodologies, the
463 included studies provided evidence of reduced return-to-work rates for stroke survivors with aphasia
464 compared with those without aphasia. The authors called for specialized vocational rehabilitation for
465 this population.

466

467 A further record that explored the potential use of a framework for assessing the readiness of
468 individuals with aphasia to work discussed barriers and facilitators of particular relevance to people
469 with aphasia that have been documented in the literature.⁴⁵ Specific communication-related barriers
470 included performance-related stress related to communicatively demanding workplace environments;
471 lack of guidelines specifically for people with aphasia considering a return to work; employers' lack of
472 awareness of aphasia and how to support communication; and lack of familiarity and established
473 networks between speech-language pathologists and vocational rehabilitation counselors. Facilitators
474 specific to people with aphasia included working with speech-language pathologists on strategies to
475 support communication; assessment of decision-making capacity and tools to support informed
476 decision-making; technology such as speech-to-text or text-to-speech, text prediction, and
477 proofreading software; communication support training for coworkers; and the reciprocal provision of
478 training between speech-language pathologists and other rehabilitation professions.

479

Table 5: facilitators affecting return to work post-stroke ranked by number of records in which they are mentioned (N = 31)

Facilitator	No. records
Person-related:	
Practical coping strategies	13*
Financial necessity	12
Support of family, friends (+ family feeling supported)	11
Insight into limitations	11
Motivation/ resilience	9*
Value of work/feeling valued	9
Improvement over time	8
Knowledge of/confidence in accessing support for RTW	7
Marker of return to independence/normality/recovery	6
Peer support (other stroke survivors)	4
Social aspects of work	4
Changing job	4
Feeling of control/freedom to make decisions	4
Spiritual coping strategies	3
(Confidence in) ability to meet demands of job	3
Being self-employed	2
Guilt/fear if not RTW soon	2
Medical stability	1
Person-employer interaction:	
Communication/openness between person and employer	9*
Positive relationship with employer pre-stroke	6
Initial RTW experience	1
Rehabilitation services:	
Provision of information/support	15
Provision of rehabilitation (general/specialist VR)	6
Communication/cooperation/shared learning between HCPs	2
Medication	2
Rehabilitation services/employer interaction:	
(Timely) specialist VR support/coordinator	13
Early/positive liaison between healthcare/VR support and employer	13
(Timely)/flexible/detailed assessment/RTW plan	10
Employer:	
Work adjustments	24*
Supportive employer/supervisor	21*

Supportive colleagues	12
Support from OHS/HR/employment services	11
Transport/equipment	7
Training/work trial/voluntary work as transition	8
Employer knowledge of RTW responsibilities	7
Union support	3
Person/rehabilitation services/employer interaction	
Negotiation/collaboration between person, employer and healthcare/VR	1

* Includes record with focus on communication disorders (see below under Question iv)

Key:

HCP = Healthcare professional

HR = Human resources

OHS = Occupational health service

RTW = Return to work

VR = Vocational rehabilitation

480 In addition, 2 qualitative interview studies reported on barriers and facilitators affecting return to work
481 for participants with aphasia.^{60,121} The barriers identified by participants were stress; fatigue;
482 anxiety/reduced confidence; fear of sharing problems/asking for help; negative experience of initial
483 return to work; having an unsupportive employer/supervisor; unsupportive colleagues; minimal work
484 adjustments; the employer's lack of awareness of aphasia; and the perception that the employer
485 wanted the participant to leave. The facilitators identified by participants were practical coping
486 strategies and motivation; good communication between the person and the employer; having a
487 supportive employer; and work adjustments. These barriers and facilitators are included in the tallies
488 in Tables 4 and 5.

489

490 It is notable that while only these 2 studies focus on communication disorders, 6 further reports
491 mention it as a factor,^{20,47,84,99,104,107} and 8 mention it as a barrier affecting return to
492 work.^{21,22,24,46,61,62,118,128}

493

494 **Discussion**

495 This scoping review has identified a significant body of literature related to post-stroke return to work,
496 spanning factors that influence it (the majority of included records), barriers and facilitators from the
497 perspectives of different stakeholders, and interventions designed to support return to work (the least
498 represented type of records). The review found very few records of any type with a focus on
499 communication disorders. These findings concur with Green et al.,³² who reported relatively few
500 intervention studies. Green et al. commented that it was unfortunate that their review, which included
501 literature from 1998–2018, revealed that there had been little progress in this respect since a 2002
502 review.³ Our review demonstrates that there remains a significant gap in the evidence-base with
503 respect to post-stroke return-to-work interventions. Green et al. only included quantitative studies,
504 while our review was more inclusive, allowing us to explore the experience of return to work from
505 various stakeholders' perspectives, including stroke survivors themselves. We found a sizable body of
506 evidence on the barriers and facilitators that are involved, suggesting that return to work post-stroke is
507 an important area that needs to be addressed by future research. Our review further differs from that
508 of Green et al. by mapping the evidence-base on return to work for people with post-stroke
509 communication disorders. The sparseness of literature on this topic is striking, given the prevalence of
510 post-stroke communication disorders and the importance of communication in all aspects of working
511 life.

512 As well as the overall low number of records reporting on intervention studies, our review also
513 concurs with Green et al. regarding the significant disparity in how return to work is measured; for
514 example, whether this is a binary yes or no,⁶⁶⁻⁶⁹ whether the extent of return to work (in terms of
515 fulfillment of previous hours or role) is taken into account,^{16,63-65,67,68} or whether the actual quality of
516 return to work in terms of the stroke survivors' current abilities is measured.^{63-65,69} This highlights a
517 need for the research community to describe more fully what a return to work involves, and to
518 measure outcomes using more robust and agreed standardized methods, as suggested by the work

519 of the COMET (Core Outcomes in Effectiveness Trials) Initiative.¹³⁰ The observation that only 1 out of
520 7 intervention studies used a randomized controlled trial methodology is also worthy of further
521 comment, especially as this study was 1 in which a specific impairment-based intervention was used
522 (as opposed to a more holistic return-to-work or vocational rehabilitation program), and the study did
523 not find that the provision of the intervention treatment improved the likelihood of return to work. In
524 contrast, other studies on return to work or vocational rehabilitation programs that used observational
525 methodologies did report positive results. While it may be challenging to use standard experimental
526 designs in the design and evaluation of complex interventions, it is suggested that high-quality studies
527 should still be undertaken to investigate the efficacy of return to work or vocational rehabilitation
528 programs.¹³¹

529
530 Regarding factors affecting return to work, the observation that being male or being young leads to a
531 more likely return to work is perhaps related to social norms and expectations.^(eg132) It is also not
532 surprising that people who have been less impacted by their stroke in terms of cognitive or physical
533 impairment or who required shorter periods of hospitalization or rehabilitation are more likely to return
534 to work. These findings highlight the need to identify people who are more likely to require additional
535 support to return to work, and to provide them support using personalized health care models tailored
536 to their individual needs.¹³³

537
538 For the barriers and facilitators for return to work, the groupings of these into the intra-personal
539 (including personal traits and the impact of the stroke), the interpersonal (including support and
540 willingness/ability to accommodate the needs of the stroke survivor), and intervention-related (the
541 provision of specialist professional support) reflected those found in qualitative research in other
542 areas of stroke recovery, including physical activity and engagement in rehabilitation.¹³⁴⁻¹³⁶ In
543 common with the research cited previously, a frequently cited barrier was a lack of intervention-
544 related support, which in this case equates to specialist vocational rehabilitation. This relates to the
545 review findings discussed earlier, namely the paucity of high-quality research on interventions that
546 support return to work. More specific to the field of returning to work, the barriers related to the
547 employer of the stroke survivor merit further exploration. This perhaps stems from the mismatch in
548 perceptions between the stroke survivor and their employer in terms of their abilities and needs, and
549 the employer's perceived burden of employing somebody with a long-term disability. This may arise
550 from their lack of knowledge of the disability, their obligations as an employer, and the support
551 available to help them meet the needs of the individual.¹³⁷

552
553 There was extensive evidence from the research into facilitators that, in addition to drawing on their
554 own resilience and personal support mechanisms, stroke survivors can and, in many cases already
555 do, benefit from the provision of tailored rehabilitation support, understanding and accommodating
556 employers and/or coworkers, and good communication between all stakeholders. Future research on
557 interventions to support return to work is needed to learn from these facilitators to ensure that positive
558 return-to-work experiences are more commonplace.

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Finally, it is necessary to address barriers and facilitators specific to people returning to work with communication disorders. The finding that people with aphasia are less likely to return to work than other working-age stroke survivors⁹ may be due to the fact that communication disorders not only have a direct effect on the person's ability to carry out their role, but they may also affect the person's ability to articulate their needs to their employer, negotiate the terms of a return to work, advocate for themselves, and identify and address any issues that arise. The 2 primary research studies that focused on people with post-stroke communication disorders also highlighted the lack of knowledge of aphasia among employers and coworkers,^{60,121} which is perhaps unsurprising given the poor public awareness of this disorder.¹³⁸ One of these studies was a single case study,⁶⁰ while the other was an interview study covering many aspects of living with post-stroke aphasia, with return to work being only a small facet.¹²¹ This current review has identified a significant gap in the literature on research, with an in-depth focus on barriers and facilitators specific to this group of people, which is vital in informing interventions tailored to their needs.

574 ***Limitations of the review***

575 It is acknowledged that the exclusion of records not written in English, from the most developed
576 countries, or pre-2010 potentially omitted some relevant studies. In addition, it limits the generalizability
577 of the review findings. It was also challenging to capture the most appropriate search terms, given the
578 breadth of the topic. However, our additional search for records pertaining to subarachnoid
579 hemorrhages demonstrates our effort to be as comprehensive as possible. We also acknowledge that
580 excluding conference abstracts may have meant that potentially valuable data was missed. Our
581 decision to exclude such records was made on the grounds that it was unlikely that there would be
582 sufficient data to extract from these sources. We have also noted 2 deviations from the published
583 protocol. Firstly, for the majority of the included records, data was extracted by just 1 reviewer. Because
584 of the high-level agreement between the reviewers for the studies where data extraction was carried
585 out by both reviewers, and the frequent discussions between the reviewers throughout the process, we
586 do not feel that this deviation adversely affected the rigor of the review. The second deviation was the
587 decision not to use relational analysis, but as discussed previously, this is because it was felt that the
588 included records did not lend themselves to this approach.

589 **Conclusions**

590 While there is a significant body of literature on factors, barriers, and facilitators affecting post-stroke
591 return to work, there is little evidence on interventions that may facilitate return to work, and a lack of
592 consistency on how such interventions are evaluated in terms of outcome measures. Furthermore, there
593 is a significant gap in knowledge about the return to work for people with post-stroke communication
594 disorders.

595

596 **Implications for research**

597 This review suggests the need for high-quality research on interventions to support people to return to
598 work following a stroke, with standardization in how these interventions are evaluated. There is also an
599 urgent need for research on the specific impact of post-stroke communication disorders on people
600 attempting to return to work, including the development of focused interventions to support them.
601

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605 **Declarations**

606 **Author contributions**

607 EC conceived the idea for the review and developed it with KC. EC led the review and KC contributed
608 to all stages of the review process. EC prepared the first draft of the manuscript, which was redrafted
609 jointly by EC and KC. Both authors approved the final version.

610 Declaration of interest

611 KC is an Associate Editor for JBI Evidence Synthesis. EC has no conflict of interest to declare.

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975 **Appendix I:**

976 ***MEDLINE (Ovid)***

977 Search conducted January 21, 2022

Search	Query	Records retrieved
#1	MH stroke OR MH aphasia/ or articulation disorders/ or dysarthria OR MH speech disorders OR TX “stroke” OR TX “cerebrovascular accident” OR TX “CVA” OR TX “aphasia” OR TX “dysarthria” OR TX “communication disorder*” OR TX “communication impairment*” OR “speech difficult”	364,806
#2	MH return to work/or work engagement/ or work performance OR MH rehabilitation, vocational OR MH employment OR MH occupations OR TX “return* to work” OR TX “RTW” OR TX “back to work” OR TX “working age” OR TX “work reintegration” OR TX “work rehabilitation” OR TX “work participation” OR TX “work status” OR TX “vocation**” OR TX “occupational rehabilitation” OR TX “occupations” OR TX “job retention” OR TX “employment” OR TX “employer*” OR TX “employee*”	241,399
#3	1 AND 2	1780
#4	limit to (English language and year = “2010 – Current”)	1073

978

979 **Embase (Ovid)**

980 Search conducted January 21, 2022

Search	Query	Records retrieved
#1	MH cerebrovascular accident OR MH aphasia OR MH dysarthria OR TX “cerebrovascular accident” OR TX “aphasia” OR TX “dysarthria”	300,054
#2	MH return to work OR MH work resumption OR MH vocational rehabilitation OR MH employment OR MH occupation OR TX “return* to work” OR TX “work resumption” OR TX “vocational rehabilitation” OR TX “employment” OR TX “occupation” OR TX “work integration” OR TX “work rehabilitation” OR TX “work participation” OR TX “job retention” OR TX “employ**”	958,763
#3	1 AND 2	5997
#4	limit to (English language and year = “2010 – Current”)	5042

981

982 **AMED (Ovid)**

983 Search conducted January 21, 2022

Search	Query	Records retrieved
#1	MH stroke OR MH aphasia OR MH dysarthria OR TX "stroke" OR TX "cerebrovascular accident" or Tx "CVA" OR TX "aphasia" OR TX "dysarthria"	10,717
#2	MH rehabilitation, vocational OR MH employment OR TX "work engagement" OR TX "occupations" OR TX "return* to work" OR TX "RTW" OR TX "back to work" OR TX "working age" OR TX "work reintegration" OR TX "work rehabilitation" OR TX "job retention" OR TX "employment" OR TX "employer*" OR TX "employee*"	10,544
#3	1 AND 2	132
#4	limit to (English language and year = "2010 – Current")	66

984

985 **CINAHL (EBSCO host)**

986 Search conducted January 21, 2022

Search	Query	Records retrieved
#1	MH stroke OR MH aphasia OR MH dysarthria OR MH communicative disorders OR MH speech disorders OR TX "stroke" OR TX "aphasia" OR TX "dysarthria" OR TX "communication disorder" OR TX "speech disorder" OR TX "communication impairment"	15,783
#2	MH job re-entry OR MH occupations and professions OR MH rehabilitation, vocational OR work engagement OR job performance OR TX "return* to work" OR TX "RTW" OR TX "back to work" OR TX "working age" OR TX "employee*" OR TX "employer*" OR TX "employment" OR "job retention" OR TX "occupations" OR TX "occupational rehabilitation" OR TX "vocation*" OR TX "work status" OR TX "work rehabilitation" OR TX "work participation" OR TX "work reintegration"	172,855
#3	1 AND 2	224
#4	limit to (English language and year = "Jan 2010 – Jan 2022")	148

987
988

989 **JB1 Evidence Synthesis**

990 Search conducted January 21, 2022

991

Search	Query	Records retrieved
#1	TX “stroke” AND TX “return to work”	10
#2	TX “stroke” AND TX “employment”	28
#3	TX “stroke” AND TX “vocational rehabilitation”	3
#4	TX “aphasia” AND TX “return to work”	3
#5	TX “aphasia” AND TX “employment”	4
#6	TX “aphasia” AND TX “vocational rehabilitation”	2
#7	TX “dysarthria” AND TX “return to work”	1
#8	TX “dysarthria” AND TX “employment”	1
#9	TX “dysarthria” AND TX “vocational rehabilitation”	1
#10	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9	53
#11	Limit to (English language and year = “Jan 2010 – Jan 2022”)	41

992

993 **Cochrane Library (Controlled Trials and Reviews)**

994 Search conducted January 21, 2022

995

Search	Query	Records retrieved
#1	TX “stroke” OR TX “aphasia” OR TX “dysarthria”	76,826
#2	TX “return* to work” OR TX “employment” OR TX “vocational rehabilitation”	8848
#3	1 AND 2	312
#4	limit to (English language and year = “Jan 2010 – Jan 2022”)	245

996

997

998 **PEDRo**

999 Search conducted January 21, 2022

1000

Search	Query	Records retrieved
#1	TX "stroke" AND TX "return to work"	2
#2	TX "stroke" AND TX "employment"	0
#3	TX "stroke" AND TX "vocational rehabilitation"	0
#4	TX "aphasia" AND TX "return to work"	0
#5	TX "aphasia" AND TX "employment"	0
#6	TX "aphasia" AND TX "vocational rehabilitation"	0
#7	TX "dysarthria" AND TX "return to work"	0
#8	TX "dysarthria" AND TX "employment"	0
#9	TX "dysarthria" AND TX "vocational rehabilitation"	0
#10	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9	2
#11	Limit to (English language and year = "Jan 2010 – Jan 2022")	1

1001

1002 **OTseeker**

1003 Search conducted January 21, 2022

1004

Search	Query	Records retrieved
#1	TX "stroke" AND TX "return to work"	0
#2	TX "stroke" AND TX "employment"	1
#3	TX "stroke" AND TX "vocational rehabilitation"	0
#4	TX "aphasia" AND TX "return to work"	0
#5	TX "aphasia" AND TX "employment"	0
#6	TX "aphasia" AND TX "vocational rehabilitation"	0

#7	TX "dysarthria" AND TX "return to work"	0
#8	TX "dysarthria" AND TX "employment"	0
#9	TX "dysarthria" AND TX "vocational rehabilitation"	0
#10	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9	1
#11	Limit to (English language and year = "Jan 2010 – Jan 2022")	0

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1008 **Appendix II: Data extraction instrument**

1009

1010

Title	Author (year)	Country	Study focus Intervention Barriers Facilitators Factors	Sample Number Gender Age	Participant socioeconomic status	Participant RTW status	For communicati on Dis? Y- sole Y- combined N	Name of RTW interventi on	Intervention intensity/durati on	Interventi on setting	Interventio n profession als involved	Primar y outcom e domain	Primar y outcom e measur e	Barri er	Facilitat or	Fact or

1011 RTW, return to work

1012 Dis = disorders

1015 **Appendix III: Characteristics of included studies**

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
					Number % male	Age of study population (years)	Pre-stroke employment type
Aarnio ²⁰	2018, Finland Pub	Factors	Primary research: observational (prospective cohort)	"To investigate the proportion of young patients NRTW at 1 year after IS and during follow-up, and clinical factors associated with NRTW." ^{p.1}	769 62.2	Mean 44 (37-47)	98 upper-white collar, 219 lower-white collar, 346 blue collar, 106 unknown
Aas ⁷⁹	2018, Norway Pub	Factors	Primary research: observational (prospective cohort)	"To examine factors that might impact the time to first RTW for patients with ABI, participating in a RTW-program." ^{p.2561}	137 ABI (of whom 103 had stroke) 57.7	Mean 51 (19-66)	Reported for 99 participants: 19 office jobs, 9 sales and service occupations, 16 skilled trades, 17 health care professions, 9 process plant machine operators, 18 managers and officials, 11 academic professions
Al Yassin ⁷²	2017, USA NR	Factors	Primary research: observational	"To identify predictors of successful return to full-employment status following aSAH." ^{p.67}	152 (of whom 130 RTW status known at 6 months)	RTW group: mean 48.8 (SD 11.5); NRTW group:	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(retrospective cohort)		RTW: 40.6; NRTW: 34.85	mean 51.2 (SD 10.1)	
Andersen (80)	2012, Denmark Pub	Factors	Primary research: observational (prospective cohort)	"To examine whether fatigue is independently associated with the chance of returning to paid work." ^{p.249}	83 52	Mean 53.8 (45.4-58.2)	NR
Anon (55)	2015, UK NA	Barriers and facilitators	Magazine article	(Advice from stroke survivor on RTW).	1 0	44	Management in large bank
Arwert (81)	2017, Netherlands Pub	Factors	Primary research: observational (cross-sectional)	"To determine factors associated with sustained RTW 2–5 years after stroke in a hospital-based population in the Netherlands." ^{p.240}	46 63	Mean 47.7 (SD 9.7)	NR
Ashley (39)	2019, USA Pub	Factors	Narrative review	"To synthesize and discuss the literature relevant to factors affecting RTW for stroke survivors, summarize the identified	14,050 (across 19 studies) NA	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				gaps, and discuss steps occupational health nurses can take to facilitate RTW among stroke survivors.” ^{p.87}			
Balasooriya-Smeekens (115)	2016, UK Pub	Barriers and facilitators	Primary research: qualitative (analysis of online forum posts)	“To explore barriers and facilitators to staying in work following stroke.” ^{p.1}	60 48.3 (gender not stated = 13.3%)	Mean 44 (25-66)	2 higher professional occupations, 15 lower managerial/administrative/professional occupations, 12 intermediate occupations, 1 small employers/own account workers, 4 semi-routine occupation, 1 routine occupations, 2 other (eg, more than 1 job/category), 23 NR
Balasooriya-Smeekens (21)	2020, UK Pub	Barriers and facilitators	Primary research: qualitative (focus groups)	“(To explore) the role of primary care in supporting survivors of transient ischaemic attack/stroke RTW with stakeholders from a local UK community.” ^{e294}	8 stroke survivors (+ 10 other stakeholders: caregivers; employer; health care workers) 87.5	(50-65)	2 small employers/own account holders, 2 national government administrative occupations, 1 lab technician, 1 plumbing/heating/ventilating engineer, 1 chemical scientist, 1 manager/proprietor in other service.

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
Baldwin (30)	2011, Australia NR	Intervention	Systematic review	"To determine the effect of vocational rehabilitation programs on RTW rates post-stroke." ^{p.562}	462 (across 6 studies) NA	NA	NA
Bin Zainal (17)	2020, Singapore Pub	Intervention	Primary research: observational (retrospective cohort)	"To report the RTW rate of people with stroke who completed a local, community-based vocational rehabilitation program and to describe the program's impact on their community reintegration." ^{p.1}	50 74	Median 44 (interquartile range = 38-42)	NR
Brannigan (28)	2017, Ireland Pub	Barriers and facilitators	Systematic review	"To examine barriers to and facilitators of RTW after stroke from the perspective of people with stroke through the process of a qualitative meta synthesis." ^{p.211}	215 (across 15 studies) NA	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
Brey (18)	2015, USA Pub	Factors	Primary research: observational (prospective cohort)	"To investigate the relationships among factors that influence RTW for young individuals with mild stroke from different socioeconomic backgrounds." ^{p.106}	24 Of 21 who RTW: 42 (skilled worker group; 43 (unskilled worker group)T	Skilled worker group: mean 51.17 (SD 7.33); unskilled worker group: mean 49.67 (SD 7.75)	Of 21 who RTW: 12 in skilled labor group, 9 in unskilled labor group
Burns (50)	2018, USA NR	Facilitators	Guideline	"To describe current opportunities and gaps that support persons with mild stroke as they reintegrate to the community, with a focus on return to driving and return to work." ^{p.2378}	NA NA	NA	NA
Buunk (73)	2019, Netherlands NR	Factors	Primary research: observational (prospective cohort)	"To examine the value of cognitive deficits in the prediction of long-term RTW after SAH." ^{p.1}	71 39.4	Mean 49.2 (SD 7.9)	NR
Cain (82)	2021, Australia Pub	Factors	Primary research: observational	"To provide characteristics of working-age stroke participants and identify factors associated with	376 78	Median 56	298 in full-time work, 78 in part-time work

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(prospective cohort)	return to work at 12 months."p.1			
Cameron (48)	2016, Canada Pub	Facilitators	Guideline	“(To recommend) support, education, and skills training for patients, families, and caregivers; effective discharge planning; interprofessional communication; adaptation in resuming ADL; and transition to long-term care for patients who are unable to return to or remain at home .”p.807	NA NA	NA	NA
Chang (83)	2016, South Korea Pub	Factors	Primary research: observational (prospective cohort)	“To investigate the RTW status of patients with first-ever stroke with functional independence 6 months post stroke.”p.273	933 77.1	Mean 56.99	55 senior officials/managers, 93 professionals/associated workers, 185 clerical workers, 139 service workers, 88 sales workers, 128 skilled agricultural/forestry/fishery workers, 108 craft/related trades workers, 55 plant or machinery operators/assemblers, 56

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
							elementary occupations, 11 armed forces occupations, 15 NR
Conlon (46)	2018, New Zealand NR	Barriers and facilitators	Service evaluation	“(To present) findings from the New Zealand Stroke Foundation RTW programme ... to understand how well the programme is working in the view of stroke survivors and providers to support employment goals for working-age people who have experienced a stroke. ... (to identify) key factors that support stroke survivors to find employment.” ^{p.6}	95 72.6	(7 under 34; 11 in range 35-44; 25 in range 45-54; 44 in range 55-64)	NR
Coole (116)	2013, UK Pub	Barriers and facilitators	Primary research: qualitative (interviews)	“To explore RTW after stroke from the employer perspective, to identify key features associated with success, and to seek	18 employer stakeholders NA	NA	2 in manufacturing, 3 in engineering, 5 in public sector service, 1 in private sector service, 3 in voluntary sector

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				participants' views regarding the role of health care in RTW. ^{p.406}			service, 3 in other service, 1 in various.
Culler (61)	2011, USA Pub	Barriers and facilitators	Primary research: qualitative (interviews; qualitative survey)	"To identify factors that facilitated or acted as a barrier to RTW for stroke survivors." ^{p.325}	10 stroke survivors (+ 28 other stakeholders: vocational specialists; employers) 30	(2 under 40; 4 in range 41-50; 4 in range 51-60)	NR
Different Strokes (51)	2018, U NA	Barriers and facilitators	Information leaflet	Advice pack for stroke survivors on RTW after stroke.	NA NA	NA	NA
Different Strokes (52)	NR, UK NA	Barriers and facilitators	Information leaflet	Advice pack for family and friends on RTW after stroke.	NA NA	NA	NA
Different Strokes (53)	2018, UK NA	Barriers and facilitators	Information leaflet	Advice pack for employers on RTW after stroke.	NA NA	NA	NA
Doucet (84)	2012, France NR	Factors	Primary research: observational	"To describe the professional outcome in ... patients at least 3 years	56 62.5	Mean 48.3 (SD 10.1)	34 blue collar, 22 white collar. 12 workers, 22 employees, 5 intermediate professionals, 8

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(cross-sectional)	after their stroke. ... to identify factors likely to promote or hinder a RTW in this population.”p.113			manager/liberal professionals, 9 trades/craftsperson/company owners.
Edwards (7)	2017, Canada NF	Factors	Systematic review	“To determine the frequency of RTW at different time points after stroke and identify predictors of RTW.”p.243	44,255 (over 29 studies) NA	NA	NA
Endo (85)	2016, Japan NF	Factors	Primary research: observational (retrospective cohort)	“To investigate the cumulative RTW rate and to clarify the predictors of the time to full-time RTW and resignation among Japanese stroke survivors, within the 365-day period following their initial day of absence due to stroke.”p.1	380 87.3	Mean 52.7	88 desk workers, 292 manual workers 22 managers, 358 non-managers
Fride (86)	2015, Israel NF	Factors	Primary research: observational	“(To) compare cognition, participation and QOL between people 3 months post-mild stroke who RTW	163 71.8	Mean 63.75 (SD 7.7)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(cross-sectional)	and those who did not; and to determine the correlates of these variables to RTW of participants 3 months post-stroke." ^{p317}			
Fukada (87)	2019, Japan NF	Factors	Primary research: observational (retrospective cohort)	"(To) investigate the physical, cognitive and social factors associated with the RTW of blue-collar workers after stroke." ^{p.2187}	71 76.0	Mean 54.4 (SD 9.7)	20 service work, 1 security work, 11 agriculture/forestry/fishery work, 10 manufacturing process work, 8 transport/machine operation work, 19 construction/mining work, 2 carrying/cleaning, and related work. 26 self-employment status (employers); 45 employees.
Fukuzawa (88)	2018, Japan NF	Factors	Primary research: observational (retrospective cohort)	"(To explore) what sociodemographic factors and clinical measures were correlated with re-employment." ⁵⁹⁹	150 83.3	RTW group: mean 50 (SD 8); NRTW group: mean 53 (SD 9)	113 blue-collar, 47 white-collar
Gard (25)	2019, Sweden	Barriers and facilitators	Primary research:	"To explore stroke survivors' experiences of	20 65	Median 52 (range 39-62)	14 in private sector; 6 in public sector

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
	Pub		qualitative (focus groups)	health care–related facilitators and barriers concerning RTW after stroke.” ^{p.741}			
Gerner (74)	2020, Germany NF	Factors	Primary research: observational (retrospective cohort)	“To assess the frequency of complications post-SAH and to investigate whether these complications attribute to functional and self-reported outcomes as well as the ability to RTW in these patients.” ^{p.307}	505 total (359 available for follow up, of whom 251 had been working pre SAH) 35.6 (of total)	Mean 55.9 (SD 13.9)	NR
Ghanbari Ghoschchi (16)	2020, Italy Pub	Intervention, Factors	Primary research: RCT	“To assess RTW and QOL of patients with stroke after conventional rehabilitation and technological rehabilitation (performed with wearable and/or optic assistive devices) while identifying the prognostic factors for a successful RTW.” ^{p.2}	48 64.6	Mean 51.8 (SD 11.1)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
Glader (81)	2016, Sweden Pub	Factors	Primary research: observational (retrospective cohort)	"To analyze how functional status and socioeconomic status affect RTW among younger patients with first-time stroke in a Sweden." ^{p.608}	2539 62.7	(141 in range 25-34; 555 in range 35-44; 1843 in range 45-55)	846 low income, 846 middle income, 847 high income
Graham (9)	2011, Canada NR	Factors	Narrative review	"To determine the predictive nature of aphasia on RTW in younger stroke survivors." ^{p.954}	1612 (across 9 studies) NA	NA	NA
Green (32)	2021, Australia NR	Interventions, Factors	Scoping review	"To gain an understanding of the concept of RTW, how it is defined in the literature, types of research conducted on RTW after stroke, and characteristics of patients who do and do not RTW; ...to gain an understanding of the interventions that were successful for RTW, their efficacy, and which health	NR	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				care professionals conducted such interventions.” ^{p.194}			
Gustafsson (62)	2012, Australia NR	Barriers	Primary research: qualitative (analysis of email correspondence)	“To explore the RTW experience from the perspective of one person with mild stroke.” ^{p.99}	1 0	32	Full time worker (no further details)
Guzik (41)	2020, Poland NR	Barriers and facilitators, Factors	Narrative review	“To provide a narrative review of papers published in the last 11 years in English and in Polish and focusing on demographic characteristics of individuals RTW after stroke, RTW rates, length of time post-stroke to RTW, as well as health conditions, or personal and	1138 (across 19 primary research studies. Study also includes 7 systematic reviews) NA	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				environmental factors associated with RTW after stroke.” ^{p.1}			
Hackett (90)	2012, Australia Pub	Factors	Primary research: observational (prospective cohort)	“To determine which early modifiable factors are associated with younger stroke survivors’ ability to return to paid work in a cohort study with 12-months of follow-up conducted in 20 stroke units in the Stroke Services NSW clinical network.” ^{p.1}	271 72	Mean 51 (SD 10)	218 full time; 53 part time 65 self-employed, 141 non-manual
Han (91)	2019, South Korea Pub	Factors	Primary research: observational (prospective cohort)	“To investigate the rate of RTW and identify key factors associated with RTW between 3 months and 2 years after stroke.” ^{p.1}	193 84.5	(118 under 65; 75 in 65 or over group)	NR
Hannerz (92)	2011, Denmark Pub	Factors	Primary research: observational	“(To estimate) the effect of various predictors on the odds of returning to work after stroke.” ^{p.2}	19,903 60.9	(9930 under 50; 9973 in range 50-57)	1231 legislators/senior officials/managers, 2190 professionals, 2980 technicians and associate professionals, 9129

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(prospective cohort)				workers skilled at basic level, 2475 workers in elementary occupations, 1898 not otherwise specified.
Hannerz (93)	2012, Denmark Pub	Factors	Primary research: observational (prospective cohort)	To estimate the effect of enterprise size on the odds of RTW among previously employed stroke patients in Denmark. ^{p.456}	12,106 60.4	Mean 47.6	2755 in very small company, 3293 in small company, 3480 in medium company, 2578 in large company.
Harris (75)	2014, USA NR	Factors	Primary research: observational (retrospective cohort)	"To investigate factors influencing RTW after aSAH." ^{p.207}	134 28	Mean 52.2 (SD 8.8)	NR
Harris (40)	2014, USA NR	Factors	Narrative review	"To provide nurses working with patients with stroke empirical evidence related to RTW outcomes." ^{e174}	28,684 (across 12 studies) NA	NA	NA
Hartke (118)	2015, USA Pub	Barriers and facilitators	Primary research: mixed methods	"To describe the development and results of a detailed survey on RTW after stroke completed by	715 48.1	Mean 54 (SD 11.4)	Mostly in skilled occupations.

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(interviews, focus groups, surveys)	survivors at various stages of recovery."p.325			
Hartke (117)	2011, USA Pub	Barriers and facilitators	Primary research: qualitative (interviews)	"To describe the facilitators and barriers that stroke survivors encounter in their efforts to RTW after stroke."p.342-343	12 67	Mean 51 (range 31-67)	Range from unskilled (clerical; truck driver; hotel housekeeping; building maintenance; customer service/sales) to skilled (accounting; financial analyst; physician; business management).
Hellman (119)	2016, Sweden Pub	Barriers and facilitators	Primary research: qualitative (focus groups, interviews)	"To explore and describe important aspects expressed by Swedish stakeholders in the RTW process for persons post-stroke, and to contrast the stakeholders' aspects by exploring different perspectives that may influence optimal RTW."p.901	5 stroke survivors (+ 27 other stakeholders: employment services; health care; employers) 40	NR	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
Hofgren (94)	2010, Sweden Pub	Factors	Primary research: observational (retrospective cohort)	“To investigate the RTW rates in a group of persons with either a stroke or a TBI, who had attended a rehabilitation centre; ... to investigate the influence of physical parameters of injury/stroke severity, and length of hospital stay, personal ADL ability and neuropsychological abilities on the rate of RTW.” ^{p.433}	48 stroke survivors (+ 24 TBI survivors) 71	Mean 53 (SD 7)	NR
Jarvis (95)	2019, UK Pub	Factors	Primary research: observational (cross-sectional)	“To determine the predictive ability of walking performance parameters for return to employment poststroke.” ^{p.3198}	46 (+ 15 control participants) 80.4	(6 in range 18-40; 29 in range 41-54; 19 in range 55-65)	42 in full-time employment; 2 retired, 2 not working
Johansson (63)	2021, Sweden Pub	Intervention	Primary research: other (description of	“To produce a clear replicable description of the ReWork-Stroke rehabilitation programme targeting RTW for people of	NA	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			development of intervention)	working age who have had a stroke." ^{p.1}			
Johansson (65)	2021, Sweden Pub	Intervention	Primary research: observational (case series)	"To gain knowledge on the implementation process of the ReWork-Stroke programme, the mechanisms of impact, and the contextual factors that might affect the process." ^{p.467}	13 61.5	Mean 50 (SD 5.7)	2 assistant nurses, 3 craft workers, 2 IT consultants, 3 teachers, 1 security guard, 1 manager, 1 forwarding agent
Kauranen (96)	2013, Finland Pub	Factors	Primary research: observational (prospective cohort)	"To investigate how the severity of stroke, defined as the number of cognitive deficits within the first weeks after a first-ever IS, predicts the inability to return to employment after 6 months." ^{p.316}	140 (+ 50 control participants) 59	Mean 52 (SD 10.5)	37 managerial, 26 clerical, 61 employees, 11 entrepreneurs, 5 students
Kerkhoff (67)	2020, Germany NR	Intervention	Primary research: observational (case series)	"(To) describe 3 case histories (of patients with spatial neglect), including sociodemographic,	3 100	(Range 51-55)	1 police commissioner; 1 psychiatrist; 1 manager in car industry

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				medical, and neuropsychological data, then the different treatments and their outcomes."p.4			
Lai (76)	2020, USA NR	Factors	Primary research: observational (cohort study with retrospective prospective elements)	"To identify factors that may predict RTW or driving after aSAH."E285	193 22	Mean 58 (SD 14)	Reported for 125 stroke survivors: 49 administration, 15 skilled non-labor, 61 skilled labor
Langhammer (97)	2018, Norway Pub	Factors	Primary research: mixed methods	"To investigate to what extent persons with stroke were able to RTW, to maintain their financial situation, and to describe the follow-up services and participation in social networks and recreational activities."p.1	230 66.9	Variable across 9 settings	Work rate varied from 27-86% across 9 settings

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
Larsen (98)	2016, Denmark Pub	Factors	Primary research: observational (prospective cohort)	"To examine whether self-rated health 3 months after stroke, clinical and demographic determinants are independently associated with RTW and subsequent work-stability." ^{p.339}	590 64	38% 49 or under; 62% 50-60	NR
Lindgren 120)	2020, Sweden Pub	Barriers and facilitators	Primary research: qualitative (focus groups)	"To explore work-related and personal facilitators and barriers to RTW and stay at work after stroke." ^{p.1}	20 70	Median 52 (range 39-62)	Spread of occupations included heavy physical work (eg, cook, paver, and concrete worker), administrative work (eg, IT consultant, manager, and customer services), and academic work (eg, researcher and laboratory engineer).
Maaijwee (59)	2014, Netherlands Pub	Factors	Primary research: observational (prospective cohort)	"To investigate the prevalence, excess risk, and risk factors of unemployment in patients after a TIA, IS, or ICH at ages 18 through 50 years,	425 IS survivors; 54 ICH stroke survivors; (+ 215 TIA survivors)	IS group: mean 39.1 (SD 8.1); ICH group: 36.2 (SD 8.8)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				compared with nationwide controls." ^{p.1132}	42.8 (IS group) 48.1 (ICH group)		
Manning (121)	2021, Ireland Pub	Barriers and facilitators	Primary research: qualitative (interviews)	"To explore the perspectives of working-aged adults with post-stroke aphasia in relation to social participation and living well with aphasia." ^{p.1504}	14 57.1	Mean 51 (SD 8)	13 employed, 1 unemployed
Martinsen (122)	2013, Norway Pub	Barriers and facilitators	Primary research: qualitative (interviews)	"To illuminate the psychosocial challenges work-aged participants (ie, aged 18–67 years) thematised during and after participating a dialogue-based psychosocial intervention during the first year following a stroke." ^{p.1}	14 78.5	Mean 54.6 (range 33-66)	11 employed, 3 unemployed
Matérne (99)	2019, Sweden Pub	Factors	Primary research: observational	"To investigate person-, injury-, activity-, and rehabilitation-related risk	1476 stroke survivors (+ 532	Mean 51.02 (SD 10.41) (whole group)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(retrospective cohort)	markers for NRTW among patients with ABI."p.728	other ABI survivors) 64 (whole group)		
Morris (60)	2011, UK NR	Barriers and facilitators	Primary research: qualitative (interview)	"(To explore) returning to work with aphasia, and (to examine) the complex relationship between the person, the aphasia, and the demands of employment."p.890	1 100	45	Accounts and development manager for large insurance firm
Morris (43)	2011, UK NR	Barriers and facilitators Factors	Narrative review	"(To review) the evidence about return (to employment) rates, factors that affect return, and the adequacy of employment-related service provision."p.1	NR NA	NA	NA
Morsund (100)	2020, Norway Pub	Factors	Primary research: observational	"To investigate employment in a patient population after a minor stroke compared to a control group NSTEMI	217 stroke survivors (+ 133 NSTEMI survivors)	Mean 55 (SD 10.2)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(prospective cohort)	and assess predictors associated with the ability to RTW.” ^{p.2}	69.1		
Mountain (49)	2020, Canada Pub	Facilitators	Guideline	“(To provide) a comprehensive set of evidence-based guidelines addressing issues faced by people following an acute stroke event.” ^{p.789}	NA NA	NA	NA
Norstedt (123)	2017, Sweden NR	Barriers and facilitators	Primary research: qualitative (interviews)	“To describe and analyze how institutional practices and discourses influence attempts to RTW after a stroke.” ^{p.637}	10 stroke survivors (+ 10 other stakeholders: employment services; health care) 60	Range 28-56	4 in public sector, 3 in private sector, 3 self-employed
Nussbaum (38)	2020, USA Pub	Factors	Systematic review	“(To provide) an update on the cognitive deficits that may result from spontaneous aSAH; (to identify) factors that may	6832 (across 65 studies) NA	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				help predict and manage these deficits at discharge and thereafter.”p.1			
Öst Nilsson (22)	2020, Sweden Pub	Barriers and facilitators	Primary research: qualitative (interviews)	“To explore and describe how coworkers and managers experience the RTW process involving a colleague with stroke who is participating in a person-centred rehabilitation programme focusing on RTW including a work trial.”p.213	7 coworkers + 4 managers of people on work trial following stroke (Gender of stroke survivors not reported)	Median age of stroke survivors = 52	6 in manufacturing, 2 in education, 1 in transport, 1 in health care, 1 in services
Öst Nilsson (124)	2017, Sweden Pub	Barriers and facilitators	Primary research: qualitative (interviews)	“To explore and describe how persons with stroke experience their RTW process while participating in a person-centred rehabilitation programme focusing on RTW.”p.349	7 71.4	Range 40-57	1 instructor, 1 transport organizer, 2 craft workers, 1 IT adviser, 1 social services person, 1 manager
Öst Nilsson (64)	2020, Sweden	Intervention	Primary research:	“(To explore) changes in work potential and work	10 60	Range 40-57	1 instructor, 1 transport organizer, 3 craft workers, 1 social service

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
	Pub		observational (case series)	performance for 10 people who worked before their stroke while participating in the (ReWork-Stroke) programme; (to describe) measures performed by the OTs to enhance work potential and work performance during the programme, and the participants' level of work re-entry 9 months after the start of their work trial." ^{p.2}			person, 1 manager, 2 IT advisers, 1 university administrator
Owensworth (68)	2010, Australia NR	Intervention	Primary research: observational (case series)	"To describe the implementation of a metacognitive contextual approach for facilitating RTW for individuals with ABI." ^{p.381}	1 stroke survivor (+ 2 TBI survivors) 100	51 (stroke survivor)	Middle manager
Palstam (125)	2018, Sweden Pub	Barriers and facilitators	Primary research:	"To explore how persons experienced RTW and their	13 61.5	Mean 50 (range 39-64)	1 accountant, 1 assistant nurse, 1 civil engineer, 2 cleaners, 1 commander on ferry, 1 dentist, 1

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			qualitative (interviews)	work situation 7-8 years after a stroke.”p.1			economist, 1 police inspector, 1 production worker, 1 service technician, 1 terminal worker, 1 vehicle fitter
Palstam (101)	2019, Sweden Pub	Factors	Primary research: observational (prospective cohort)	“To investigate the influence of work-related factors on time to RTW after stroke, and possible differences between the sexes.”p.382	204 66.6	Males: mean 53 (range 24-63); females: mean 48 (range 21-63)	Males: 65 professional occupations, 62 elementary occupations; females: 35 professional occupations, 29 elementary occupations (the authors acknowledge missing data on Employment status for 13 participants)
Phillips (126)	2019, UK Pub	Barriers and facilitators	Primary research: mixed methods (questionnaire/ interviews)	“To determine the feasibility of longer-term follow up and explore work status 6 years post-stroke.”p.27	19 74	Mean 62 (range 24-78)	NR
Pihlaja (19)	2014, Finland Pub	Factors	Primary research: observational	“To investigate the association of PSF with cognitive functioning and depressive symptoms after	133 64.7	Mean 54.6 (SD 9.5)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(prospective cohort)	stroke in working-aged, first-ever stroke patients."p.380			
Reunanen (127)	2016, Finland, Pub	Barriers and facilitators	Primary research: qualitative (interviews)	"To find out what kinds of experiences the clients had of (a home-based intervention program) and what functions and activities they considered important from the viewpoint of their own reintegration."p.78	14 (of whom 4 working pre-stroke) 64.2	Mean 66 (range 48-83)	1 had own business, 1 private practitioner, 2 NR
Roth (47)	2014, USA Pub	Factors, Barriers and facilitators	Report from symposium	"(To develop) research and policy recommendations to address the issues facing stroke survivors seeking to RTW."S75	NR	NR	NR
Rutkowski (102)	2021, Canada Pub	Factors	Primary research: observational (prospective cohort)	"(To investigate) the association between post-stroke fatigue and inability to return to	105 71	Mean 49 (SD 10.63)	97 in full-time work, 8 in part-time work, 16 physical workers, 30 clerical/technical workers, 59 high professional workers

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				work/drive in young patients aged <60 years with first stroke who were employed prior to infarct while controlling for stroke severity, age, extent of disability, cognitive function, and depression.” ^{p.1}			
Saeki (103)	2010, Japan NR	Factors	Primary research: observational (prospective cohort)	“To examine the time to RTW after first stroke and identify determinants of early RTW in Japan.” ^{p.254}	325 81.2	Mean 55.1 (SD 7.4)	119 white collar, 205 blue collar (the authors acknowledge missing data)
Saito (66)	2013, Japan NR	Intervention	Primary research: observational (case series)	“To illustrate the importance of cooperation between medical institutions and work-support agencies and (discuss) reasons why medical institutions have difficulties in supporting	2 100	31 and 51	1 supervisor in charge of customer complaints; 1 not stated

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				people who have experienced a stroke in their RTW."p.267			
Samuelsson (104)	2021, Sweden Pub	Factors	Primary research: observational (cross-sectional)	“(To investigate) young ischaemic stroke survivors with good physical recovery 7 years post-stroke in order to analyze the relation between late cognitive ability and employment.”p.3692	142 57	Mean 43 (SD 9.3)	104 in full-time work, 13 in part-time work, 9 job seekers, 5 on leave/disability pension/other, 11 missing data. 44 managers/high-level professionals, 16 lower-level professionals, 61 workers, 9 in elementary occupations, 5 students, 4 other ranks, 3 missing data
Sandberg (45)	2020, USA NF	Barriers and facilitators	Narrative review	“To show how the client-focused considering work model can be adapted to persons with aphasia as a way to provide a framework for rehabilitation counselors to use when helping people with aphasia assess their readiness to work.”p.206	NA	NA	NA

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
Schönberger (105)	2010, Germany Pub	Factors	Primary research: observational (prospective cohort)	"To investigate the relationship between physical fitness and work integration following stroke." ^{p.262}	58 62.0	Mean 45.7 (SD 10.5)	NR
Schulz (106)	2017, USA Pub	Factors	Primary research: observational (prospective cohort)	"(To describe) the RTW patterns of stroke survivors and their spousal caregivers post-stroke." ^{p.111}	159 stroke survivors (+ 159 caregivers) 74.8	Range 40-86	73 stroke survivors working pre-stroke
Schwarz (29)	2018, Germany Pub	Barriers and facilitators	Systematic review	"To carry out a meta-synthesis of (qualitative studies conducted to examine more deeply the complex and multifactorial process of RTW after stroke) and thus expand the current knowledge and available evidence in this thematic field." ^{p.29}	158 stroke survivors + 24 other stakeholders (across 14 studies) NA	NA	NA
Sen (58)	2019, UK	Factors	Primary research:	"To identify factors and trends in RTW at different	940 68.2	Mean 53.35 (SD 12.57)	474 manual; 402 non-manual

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
	Pub		observational (prospective cohort)	time-points post-stroke, in a multi-ethnic urban population."p.697			
Skolarus (56)	2016, USA Pub	Factors	Primary research: observational (prospective cohort)	“(To explore) ethnic differences in return to work among Mexican Americans .. and non-Hispanic whites ... working at the time of their stroke.”p.1851	125 62.4	Median 60 (Mexican American participants); Median 59 (Non-Hispanic white participants)	92 in full-time work, 33 in part-time work
Stroke Association (54)	2018, UK NA	Barriers and facilitators	Information leaflet	(Advice pack on RTW after stroke)	NA	NA	NA
Tanaka (108)	2014, Japan NR	Factors	Primary research: observational (prospective cohort)	“(To examine) clinical, functional, and occupational factors associated with RTW within 18 months after stroke, specifically focusing on the impact of higher cortical	250 80.8	Mean 55.4 (SD 7.0)	94 white collar, 156 blue collar 36 managers, 44 heads of department, 115 employees, 41 other (the authors acknowledge missing data)

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				dysfunction on RTW in the chronic phase.”p.445			
Tanaka (107)	2011, Japan NR	Factors	Primary research: observational (prospective cohort)	“To examine clinical, functional, and occupational factors associated with very early RTW after stroke, and to identify factors manageable through occupational arrangements, patient education, and other welfare programs.”p.743	335 80	Mean 55.2 (SD 7.2)	108 white collar, 193 blue collar 55 managers, 55 heads of department, 153 employee, 52 other (the authors acknowledge missing data)
Tani (69)	2021, Japan NR	Intervention	Primary research: observational (case study)	“(To report) the RTW and after RTW support for post-stroke patients from a combined ergonomic and rehabilitation perspective.”p.1	1 100	45	Pharmacist
Törnbom (128)	2019, Sweden NR	Barriers and facilitators	Primary research: qualitative (interviews)	“To understand how participation was experienced in everyday life by individuals of	11 63.6	Mean 48 (SD 10)	Auto mechanic, taxi driver, process leader of a company, self-employed entrepreneur, building construction, textile

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				working-age, 7–8 years after stroke;... to obtain a deeper understanding of how participants coped in everyday life, and how they reflected upon their own participation." ^{p.2}			designer, pastor, travel organizer, medical secretary, midwife, civil engineer
Trygged (129)	2012, Sweden, Pub	Barriers and facilitators	Primary research: qualitative (interviews)	"To explore long-term well-being among individuals who have returned to work after a stroke." ^{p.431}	10 20	Range 39-56	1 checker of electrical consumption, 1 cultural sector professional, 2 salespersons, 3 teachers, 1 investigator in public administration, 1 medical secretary, 1 office worker
Trygged (57)	2011, Sweden Pub	Factors	Primary research: observational (prospective cohort)	"(To examine) whether income and education were predictors of RTW after a first stroke among persons aged 40-59." ^{p.1}	7081 64.2	Range 40-59	1768 in 1 st (lowest) income quartile; 1770 in 2 nd income quartile; 1770 in 3 rd income quartile; 1773 in 4 th (highest) income quartile
Turi (77)	2019, USA Pub	Factors	Primary research: observational	"(To explore) the relationship between age, gender, race, marital status, anxiety and	121 28.9	Mean 53.92 (SD 11.16)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(prospective cohort)	depression, and RTW 3 and 12 months post aSAH."p.205			
Turi (44)	2017, USA Pub	Factors	Narrative review	"To characterize the association between psychosocial outcomes and working capacity post aSAH."p.1	1038 (across 10 studies) NA	NA	NA
Van der Kemp (109)	2019, Netherlands Pub	Factors	Primary research: observational (prospective cohort)	"To quantify RTW and work satisfaction 1 year after mild-to-moderate stroke; to determine factors predicting RTW after mild-to-moderate stroke, focusing particularly on personal and neuropsychological factors in addition to demographic and clinical characteristics."p.640	121 72.7	Mean 56.3 (SD 8.5)	NR
Van Patten (110)	2016, USA NR	Factors	Primary research: observational	"To investigate predictors of RTW in a post-stroke sample."p.2061	244 56.9	RTW group: mean 55 (SD 12.2); NRTW	108 white collar, 112 blue collar, 24 unknown

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
			(retrospective cohort)			group: mean 55.9 (SD 10.8)	
Vestling (23)	2013, Sweden Pub	Barriers and facilitators	Primary research: qualitative (interviews)	“To increase the understanding of stroke survivors’ thoughts and experiences from returning to work after stroke.” ^{p.1}	12 66.6	Median 52.5 (range 43-61)	7 white collar, 3 blue collar, 2 self-employed.
Vilkki (78)	2012, Finland NR	Factors	Primary research: observational (prospective cohort)	“To find out predictors of work status and health-related QOL approximately 11 years after SAH from the early radiological and clinical data as well as the neuropsychological test and questionnaire results assessed on average 1 year after SAH.” ^{p.1438}	101 49.5	Mean 48 (range 23-70)	NR
Vyas (111)	2016, Canada NF	Factors	Primary research: observational (cross-sectional)	“To characterize productivity and factors associated with employability in stroke survivors.” ^{p.164}	923 stroke survivors (of 91,633 respondents) 51.1	Range 18-70	Of 244 stroke survivors who stated occupation: 77 manager/health/art/education, 38 business/finance/administration, 64 sales/services, 41

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
							trades/transportation/equipment, 24 manufacturing
Wang (42)	2014, USA NR	Factors, Barriers and facilitators	Narrative review	"To compile important factors believed to influence RTW after a stroke." ^{p.553}	42 studies (number participants not stated) NA	NA	NA
Westerlind (114)	2020, Sweden Pub	Factors	Primary research: observational (prospective cohort)	"(To investigate) in what time period the RTW continues after stroke and what factors could predict RTW." ^{p.56}	1695 in RTW group (of 1968 in wider study) 63.6	Of wider study: mean 49.61 (SD 7.912)	Of wider study: 639 low income, 640 middle income, 640 high income, 49 missing data
Westerlind (112)	2017, Sweden Pub	Factors	Primary research: observational (prospective cohort)	"To explore the RTW rate and factors associated with RTW in a 6-year follow up post-stroke." ^{p.1}	174 in RTW group (of 211 in wider study) 67.3 (of wider study group)	Of wider study group: median 53 (range 21-63)	NR
Westerlind (113)	2019, Sweden Pub	Factors	Primary research: observational (prospective cohort)	"To investigate the degree of post-stroke RTW, and whether very early cognitive function screening	145 57.2	Mean 50.5 (SD 10.98)	NR

Author	Year, country Funding	Focus	Record type/study design	Aims	Stroke survivor participants		
				can predict RTW after a stroke."p.602			
Wolfenden (24)	2012, Australia Pub	Barriers and facilitators	Primary research: qualitative (interviews)	“(To explore) the experiences of young, higher functioning stroke survivors in re-establishing identity and returning to work.”p.203	5 0	Range 34-44	1 in urban planning, 1 in senior role in government department, 1 in accounts administration, 1 in customer service/office management, 1 in massage/aromatherapist/hospitality industry.

1016 ABI, acquired brain injury; ADL, activities of daily living; aSAH, aneurysmal subarachnoid haemorrhage; ICH, intracerebral hemorrhage; IS, ischemic stroke;
1017 NA, not applicable; NF, not funded; NR, not reported; NRTW, not returning to work; NSTEMI, non-ST-elevation myocardial infarction; OT, occupational
1018 therapists; PSF, post-stroke fatigue; Pub, public funding; QOL, quality of life; RCT, randomized control trial; RTW, return(ing) to work; SAH, subarachnoid
1019 hemorrhage; SD, standard deviation; TIA, transient ischemic attack; TBI, traumatic brain injury

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Supplementary file I: Studies ineligible following full-text review<level 1 heading>

1. Anon. Advocacy really helped when I lost my job. Stroke News. 2011;29(1):14.
Reason for exclusion: Unable to access
2. Anon. Back to work. Stroke News. 2013;Spring:11
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3. Anon. Benefit denial fails ERISA's review requirement. Benefits Q. 2013;29(3):69-70.
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4. Anon. Changing the story. Stroke News. 2017;Summer:6-9.
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5. Anon. Return to work among stroke survivors. Workplace Health Saf. 2019;67(2)95.
Reason for exclusion: Ineligible concept
6. Anon. "This is me now". Stroke News. 2020;Spring:8-11.
Reason for exclusion: Ineligible concept
7. Anon. Top chef returns to work after stroke. Stroke News. 2012;30(2):12.
Reason for exclusion: Unable to access
8. Aarnio K, Rodriguez Pardo J, Siegerink B, et al. Return to paid employment after ischemic stroke in young adults- a retrospective follow-up study. Eur Stroke J. 2017;2(1 suppl):351.
Reason for exclusion: Conference abstract
9. Adams J. Webwise. Nurs Stand. 2015;30(1):28.
Reason for exclusion: Ineligible concept
10. Ahn SN. Effectiveness of occupation-based interventions on performance's quality for hemiparetic stroke in community-dwelling: a randomized clinical trial study. Neurorehabilitation. 2019;44(2):275-82.
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11. Alaszewski A, Wilkinson I. The paradox of hope for working age adults recovering from stroke. Health. 2015;19(2):172-87.
Reason for exclusion: Ineligible concept

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Reason for exclusion: Ineligible concept

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Reason for exclusion: Ineligible participant population

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<https://www.aota.org/-/media/Corporate/Files/AboutOT/Professionals/WhatsOT/WI/Facts/Work-rehab.pdf>.

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15. American Occupational Therapy Association, Inc. Fact sheet: occupational therapy services at the workplace: transitional return-to-work programs [internet]. Bethesda (MD): The American Occupational Therapy Association, Inc.; 2012 [cited 2021 July 22]. Available from: <https://www.aota.org/-/media/Corporate/Files/AboutOT/Professionals/WhatsOT/WI/Facts/Transitional.pdf>.

Reason for exclusion: Ineligible participant population

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[impairments.pdf](https://www.aota.org/-/media/Corporate/Files/AboutOT/Professionals/WhatsOT/WI/Facts/Cognitive-impairments.pdf).

Reason for exclusion: Ineligible participant population

17. Ameriso SF. Return to work in young adults with stroke: another catastrophe in a catastrophic disease. *Neurology.* 2018;91(20):905-6.

Reason for exclusion: Ineligible concept

18. Anaki D, Goldenberg R, Devisheim H, Rosenfelder D, Falik L, Harif I. Restoring one's language edifice: a case study of long-term effects of intensive aphasia therapy employing cognitive modifiability strategies. *Neurorehabilitation*. 2016;39(1):3-17.
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Reason for exclusion: Ineligible concept
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Reason for exclusion: Ineligible concept
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Reason for exclusion: Ineligible participant population
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Reason for exclusion: Ineligible concept
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Reason for exclusion: Ineligible concept
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Reason for exclusion: Conference abstract
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Reason for exclusion: Conference abstract
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Reason for exclusion: Ineligible concept
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Reason for exclusion: Ineligible concept
34. Bowen A. The act now study: a randomised controlled trial of speech and language therapy early after stroke. *Neurorehabilitation Neural Repair Conference.* 2012;26(6):680.
Reason for exclusion: Conference abstract
35. Brakenridge CL, Leow CKL, Kendall M, Turner B, Valiant D, Quinn R, et al. Exploring the lived return-to-work experience of individuals with acquired brain injury: use of vocational services and environmental,

personal and injury-related influences. *Disabil Rehabil.* 2021;44(16):4332-42.

Reason for exclusion: Ineligible participant population

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