



## Review Article

## Participation of Iranian Stroke Patients in Life Areas: A Systematic Review Article

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### ABSTRACT

**Background:** Stroke is considered a common and major problem in the field of healthcare because of its high prevalence and long-term disabilities. The main aim of rehabilitation is to increase the participation of stroke patients in different areas of life. The current study purposed to review the factors influencing the participation of Iranian stroke patients in life areas.

**Methods:** Databases including ISI-Web of Knowledge, PubMed, Google Scholar, and Scopus were searched using keywords such as occupational therapy, participation, activities of daily living (ADL), instrumental activities of daily living (IADLs), work, play, leisure, education, social participation, sleep, and rest in combination with Iranian stroke patients and CVA. The quality of the studies was evaluated using the PEDro scale. All papers reviewed in this study concerned factors influencing the participation of Iranian stroke patients and were published from 2000-2020.

**Results:** In total, 178 articles were identified as eligible for an Iranian stroke study. Of these, 104 articles were discarded, and an additional 38 were removed because of repetition and duplication. After careful evaluation of the papers, 34 were selected for final analysis. Most of the included studies concerned the ADL area of participation ( $N=32$ ), and the lowest number of articles were in the areas of play ( $N=1$ ), sleep/rest ( $N=2$ ), and health management ( $N=3$ ).

**Conclusion:** In Iran, researchers have not paid enough attention to the participation of stroke patients in areas of life. Most studies focus mainly on patient's performance components, such as sensory and motor skills.

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### Background

Stroke is the main cause of disability in adults around the world [1]. Nonetheless, given the increased attention and great medical progress in elements of care and stroke prevention, the number of survivors has had significant growth, it is predicted that the number of survivors of stroke will be about 70 million in 2030 [2, 3]. Disability following stroke is seen in the form of neurological (such as motor, sensory, and visual) dysfunctions, decreased

ability to perform ADL, and neuropsychological (memory, attention, and language) impairments [4], which can affect individual independence in daily living, self-care, mobility, and working, ultimately restricting patients; ability to participate in various areas of life [5, 6]. These symptoms may have an even greater impact on one's capacity to engage in daily activities, which emphasizes the necessity of research into the factors that influence participation among stroke survivors [7]. Following a stroke, participation is often viewed as the ultimate objective of rehabilitation [8]. Patients' needs and demands are recovery of physical dysfunction and role performance; adequate care and rehabilitation services; adequate socio-economic support; easy access

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to rehabilitation centers; social, environmental, and financial support; and independence in everyday life (including self-care, work, and leisure activities) [9]. The Occupational Therapy Practice Framework (OTPF) defines these needs as different areas of occupation [10]. The ICF (International Classification Functioning, disability and health) viewpoint states that participation means engagement in life situations [11]. The OTPF indicates areas of life in which participation is essential comprise the following:

**ADLs:** Activities that are done on a regular basis and are geared toward taking care of one's own body.

**IADLs:** Activities that support everyday living in the home and community that frequently need more intricate interactions than those employed in ADLs.

**Rest and sleep:** Activities including restorative rest and sleep in order to sustain healthy and active participation in other vocational settings.

**Work:** Labor or energy expended to create, construct, produce, form, fashion, or shape items in order to organize, plan, or assess services or processes of living or governing dedicated vocations conducted for or without monetary compensation.

**Play:** Any unplanned or planned action that offers pleasure, entertainment, amusement, or diversion.

**Leisure:** Non-mandatory activity that is intrinsically driven and performed during discretionary time, i.e. time not devoted to obligatory activities such as employment, self-care, or sleep.

**Health management:** Activities involving the development, management, and maintenance of health and wellness practices, including self-management, with the objective of improving or maintaining health.

**Social participation:** The intertwining of professions to promote the desired participation in community and family activities as well as peer and friend participation in a subset of activities that include social settings with others and encourage social interdependence. Participation in social activities can take place in person or via distance technologies such as phone conversations, computer interactions, and video conferencing [12].

Studies have reported various factors that affect the participation of stroke patients in life areas, such as cognitive impairment, emotional problems, functional status, and general characteristics [13]. For example, Ezekiel showed that although depressive symptoms, cognitive functioning, and mobility are most strongly associated with stroke participation, other factors, such as fatigue and environmental factors, have received less attention [14]. Although several studies have investigated participation after stroke, few of them are from non-western countries [8]. Given that participation is completely dependent on culture and context and is influenced by both, it is necessary to investigate such situations in different populations. To the best of our knowledge, no systematic review of the literature looking into the participation of Iranian stroke patients has been conducted. Because of this gap in research and the importance of patients recovering independence in daily activities and enhanced engagement in various aspects of life, which are the main goals of stroke rehabilitation,

the current study aimed to investigate the most influential factors in participation of Iranian stroke patients.

## Methods

This systematic review was supported by Shiraz University of Medical Sciences (Code of Ethics: IR.SUMS.REC.1399.1282) and conducted based on the PRISMA approach [15]. Data bases including Medline, PubMed, Cochrane Centered Register of Controlled Trials (CCTR), Database of Abstracts of Reviews of Effects (DARE), Embase, Google Scholar, and ISI Web of Knowledge were searched, and other data was gathered from well-known Iranian and international journals in the field of stroke. Keywords developed by the National Library of Medicine such as occupational therapy, participation, ADL, IADL, work, play, leisure, education, social participation, sleep, and rest were used in combination with Iranian stroke patients and CVA. Articles published in the period between 2000 and 2020 were sought. Eligibility criteria for the selection of studies were based on population (studies on stroke patients), linguistic range (only studies reported in English or Persian), and participation in various life areas (ADL, IADL, work, play, leisure, sleep and rest, education, social participation).

**Type of studies:** Different types of studies were included in this study, such as randomized controlled trial (RCTs), cross-sectional, qualitative, and cohort studies. Abstracts, conference articles, editorials, comments, and expert opinions were excluded from the final list.

**Type of participants:** No participant age limit was considered in this study. All studies focusing on participation in ADL, IADL, work, play, leisure, social participation, education, and rest/sleep were selected for the current study.

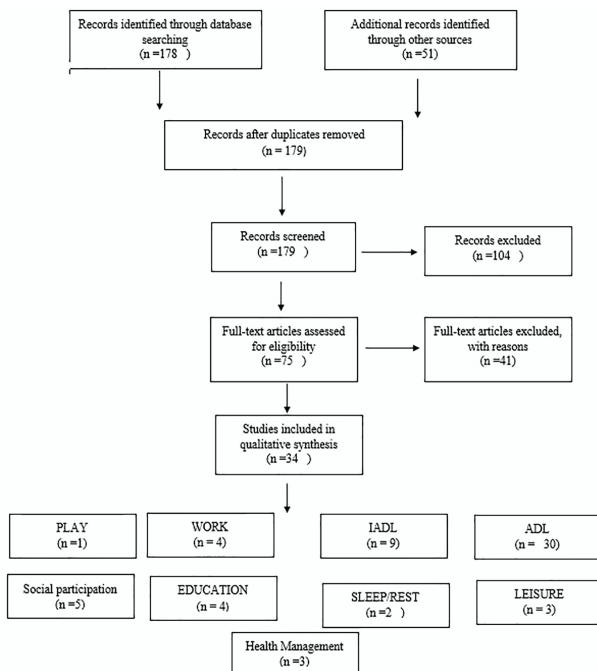
**Selection of studies:** Two researchers independently screened identified studies based on the inclusion criteria mentioned above. However, it should be emphasized that studies were selected mostly based on abstracts and titles.

**Data extraction and management:** This review follows the PICO style (population, intervention, comparison, and outcomes).

**Quality assessment and determination of risk of bias.** The quality of the studies was evaluated based on the reliable tool, the PEDro scale. Based on this scale, it is possible to determine the trustworthiness and relevance of the published paper. The PEDro scale is a checklist that examines the internal validity and interpretability of trial quality. If all conditions are met, the 11-item checklist offers a maximum score of 10 points (No points are awarded for the first criterion) [16].

## Results

In total, 178 papers regarding the current topic were identified. Based on the titles and abstracts, 100 papers were selected. Following a thorough review of the publications, 34 articles were chosen for final analysis (Figure 1). Some articles consisted of more than one area of participation and were thus categorized in more than one area.



**Figure 1:** Results of systematic review search about participation of Iranian stroke patients in different life area.

**Table 1:** Results of studies on participation of stroke patients

Authors	Study design	Method	Results	Participation Area
M. Fallahpour et al. (2013) [17]	Qualitative, descriptive	Participants: 8 Age: 57.12 Intervention: - Comparison: -	Rehabilitation services in Iran require attention to both "doing" and "identity" in rehabilitation interventions so as to enable individuals to adapt to their new lives after stroke and to "live their lives."	ADL, IADL, Play, Leisure, Work, Education, Rest and sleep, Social participation, Health management
A. Ghaffari et al. (2017) [18]	Pilot cross sectional	Participants: 40 Age: 52.55 Intervention: - Comparison: Relation of Depression, and Cognitive, Motor, and Functional Deficits	Cognitive therapy combined with motor rehabilitation can help people feel less depressed and gain independence in their everyday activities and more participation in society activities. Correlation between post-stroke depression and independence in basic activities of daily living ( $r=0.781$ , $p<.05$ ) and instrumental activities of daily living ( $r=0.741$ , $p<.05$ ).	ADL IADL
H Haghighoo et al. (2013) [19]	Cross-sectional	Participants: 40 Age: 61.5 Intervention: - Comparison:-	ADL has a strong relationship with both level of depression and QOL in patients with stroke. ADL performances ( $p=.043$ ). A significant negative correlation was found between ability in ADL performances and ASD ( $p=.001$ )	ADL
N. Jafari Golestan et al. (2019) [20]	Qualitative	Participants: 10 Age: 63.7 Intervention:- Comparison:-	The more patients are aware of their abilities and restrictions, the more they will be able to cope with the consequences of their disease during the transition from the acute to chronic phase; these patients can also adopt more suitable coping strategies.	ADL
M. Farhadian et al. (2019) [21]	Quasi-experimental study	Participants: 18 Age: 58.11 Intervention: Gait Retraining Comparison:-	According to statistical findings, the gait retraining technique may have a favorable effect on improving balance, activities of daily living $p<0.002$ , quality of life and depression in these patients.	ADL
S. Veisi-Pirkooohi et al. (2019) [22]	Clinical study	Participants: 50 Age: 55.86 Intervention: RehaCom cognitive rehabilitation software Comparison:-	Improvement effect on ADL, attention, and response control in patients with chronic stroke; Effect of RehaCom on ADL: $p<.001$ Effect of RehaCom on IADL: $p<.05$	ADL IADL
M. Rayegani et al. (2016) [23]	Descriptive observational	Participants: 108 Age: 62 Intervention: - Comparison:-	FIM is a valid tool for evaluating patients with stroke, their follow-up, and tracking the disease course. A significant improvement in FIM scores ( $p<.001$ ) was seen.	ADL
E. Fathi Azar et al. (2017) [24]	Cross-sectional	Participants: 63 Age: 46.11 Intervention: - Comparison:-	In the majority of participants, QOL was not favorable and was correlated with functional independence level ( $p=0.001$ ).	ADL

The results of all articles found are presented in Table 1. Thirty papers investigated ADL with quality varying between 0 and 7 (Table 2). However, most of these studies were qualitative, cross-sectional, or clinical trial reports with a limited number of subjects. Nine papers concerned IADL (with quality varying between 0 and 5), three concerned leisure (quality equal to 0), five papers assessed social participation (quality equal to 0), four papers focused on work and education (quality equal to 0), two papers investigated sleep/rest (quality varying between 0 and 5), one paper focused on play (quality equal to 0), and three articles examined health management (quality varying between 0 and 1).

## Discussion

The current study aimed to review articles about Iranian stroke patients in different life areas. As can be seen from the results of this study, only 34 papers on this topic with quality varying between 0 and 7 were found. The low quality scores can be explained by the limited number of subjects in the studies and study types (most were cross-sectional). Moreover, no attempts were made to

Authors	Study design	Method	Results	Participation Area
A. Dalvandi et al. (2012) [25]	Qualitative	Participants: 12 stroke patients, 13 caregivers Age: 55-70 stroke, 20-68 caregiver Intervention: - Comparison:-	In their daily lives, physical dysfunction was a major issue for both survivors and their family caregivers. This situation caused patients to become reliant on others. Stroke survivors and their families require training in techniques for dealing with and overcoming the continued obstacles of everyday life after a stroke and to reorganize their lives and increase survivors' abilities in dealing with the new situation at home. This work would be made easier if they had a daily strategy for how they would spend their time and leisure activities.	ADL, Leisure, Work, Social participation
M. Khoshbakht Pishkhani et al. (2019) [26]	Descriptive, qualitative study	Participants: stroke patients, family members, and rehabilitation team members—20 in total. Age: no mean age Intervention: - Comparison:-	Patients' adherence to rehabilitation, participation in the treatment process, and quality of life may all be improved by increasing patients' understanding of rehabilitation efficacy, improving communication with healthcare practitioners, and providing enough insurance and social support.	Health Management
A. Dalvandi et al. (2010) [27]	Qualitative	Participants: 10 Age: 55-70 Intervention: - Comparison:-	The study demonstrates the importance of assisting stroke survivors and their families in adjusting to their new position by providing proper discharge plans, social and financial assistance, social insurances, and training programs.	ADL, IADL, Work, Education, Social participation
M. Farzadfar et al. (2018) [28]	Cohort	Participants: 684 Age:- Intervention: - Comparison:-	Significant disability and functional dependency after stroke in Northeast Iran were largely attributable to the effects of stroke severity and prior dependency. Independence after one year follow-up ( $p=.004$ )	ADL
Z. Aslani et al. (2016) [29]	Participatory action research	Participants: 27 Age: 32.3 Intervention: Comparison:	The lack of nurses' educating performance skills was overcome using action research, and changes were made to improve the performance of nurses.	ADL
M. Fallahpour et al. (2011) [8]	Cross-sectional	Participants: 102 Age: 58.3 Intervention: - Comparison:-	According to the findings, physical function, mood, and availability of caregiving services are all important determinants of engagement in daily life after a stroke.	ADL, IADL, Leisure, Work, Education, Social participation
A. Dalvandi et al. (2009) [30]	Qualitative	Participants: 10 stroke, 12 family caregivers, 6 formal caregivers Age: 55-70 stroke, 20-68 family caregivers, 28-54 formal caregivers Intervention: - Comparison:-	Five main concepts emerged described as the used and recommended strategies of the participants, including improving functional performance, relearning life skills and educational support, access to rehabilitative services, socio-economical support, and well-suited coping strategies.	ADL, Education, Social participation
M. Derakhshanfar et al. (2020) [31]	Single-blinded clinical trial study	Participants: 60 Age: 63.4 intervention, 63.96 control group Intervention: sensory interventions Comparison:-	Improvement in motor function, activities of daily living ( $p=.0001$ ) and reducing spasticity are the results of these stimulations.	ADL
S. Akbari et al. (2011) [32]	Exploratory Cross-sectional	Participants: 27 Age: 51.7 Intervention: - Comparison:-	Dependency after stroke is more affected by physical symptoms of stroke than by cognitive disorders. Moreover, the intensity of neurological impairment could be a better explanation for a patient's inability to perform basic ADL independently ( $p<.05$ ).	ADL
T. Haji-Ahmad et al. (2015) [33]		Participants: 24 Age: 54.75 Intervention: biofeedback therapy Comparison:-	In stroke survivors, biofeedback combined with conventional occupational therapy appeared to be more helpful. Significant impact on day-to-day activities ( $p<.001$ )	ADL
N. Deyhoul et al. (2019) [34]	Randomized control trial study	Participants: 90 (45 intervention, 45 control) Age: mean age of family caregivers in the intervention and control groups was 41.1 and 40.6, respectively; mean age of patients in the intervention and control groups was 67.2 and 66.8, respectively. Intervention: family centered empowerment program (FCEP) Comparison: -	FCEP was effective in improving the ability of patients with stroke to perform ADLs ( $p=.047$ ).	ADL

*Participation of Iranian stroke patients*

<b>Authors</b>	<b>Study design</b>	<b>Method</b>	<b>Results</b>	<b>Participation Area</b>
M. Sahebalzamani et al. (2009) [35]	Randomized controlled trial study	Participants: 80 Age: 40-70 Intervention: self-care education Comparison:-	Self-care education of stroke survivors can improve patient's performance ( $p=.0001$ ) and change them from a dependent to an independent person.	ADL, IADL
M. Saadatnia et al. (2019) [36]	Randomized controlled trial	Participants: 40 Age: 62 intervention, 68 Intervention: home-based exercise rehabilitation Comparison:-	According to the results, this intervention produced greater improvements on functional capacity of upper and lower extremities, activities of daily living, and functional independence than did usual care all: ( $p<.001$ ).	ADL
A. Ghanjal et al. (2014) [37]	Single blind clinical trial	Participants: 36 Age: 55 functional movie observant, 54 non-functional movie observant, 54.3 control Intervention: action observation and imitation Comparison:-	Action observation and imitation with rehabilitation exercises and targeted motor activities (by stimulating the brain's plasticity) had a positive effect on improvement of functional activity indices in post-stroke patients ( $p=.006$ )	ADL
J. Eghlidi et al. (2015) [38]	Quasi-experimental	Participants: 12 Age: 59.083 Intervention: sensory-motor training Comparison:-	The sensory-motor training could be an effective intervention in the rehabilitation of stroke patients. Mean scores of pre- and post-test of Barthel Index $p=.007$ Lawton $p=.003$ FIM $p=.002$	ADL, IADL
S. Nikanfar et al. (2017) [39]	Cross-sectional	Participants: 40 Age: 59.23 Intervention:- Comparison:-	The results showed a relationship between hemiplegic lower limb sensorimotor function and independency in BADL ( $p=.002$ ) and IADL ( $p=.001$ ) in stroke patients.	ADL, IADL
M. Norouzian et al. (2017) [40]	Quasi experimental study	Participants: 20 Age: 65.8 Intervention: Tai Chi Comparison:-	The results showed that Tai Chi can be a useful intervention to improve women inflammatory status with stroke, but there was no effect on quality of sleep ( $p=.23$ ).	Rest and Sleep
S. Akbari et al. (2009) [41]	Cross-sectional	Participants: 25 Age: 51.3 Intervention: - Comparison:-	Statistical findings showed that there was no relationship between Lotca and Barthel Index ( $p=.087$ ). Nevertheless, some parts of the assessment were related to each other.	ADL
M. Derakhshanfar et al. (2018) [42]	Blind clinical trial	Participants: 60 Age: 63.4 Intervention: exteroceptive and proprioceptive stimulation Comparison:-	Sensory stimulation, both exteroceptive and proprioceptive, is useful in improving motor performance and everyday activities ( $p<.0001$ ) of the stroke patient's upper limb.	ADL
M. Ghavami et al. (2011) [43]	Experimental study	Participants: 24 Age: 57.4 intervention, 58.1 control Intervention: client-centered occupational therapy Comparison: common occupational therapy intervention	Client-centered occupational therapy has the potential to increase satisfaction, performance, and self-care independence in stroke patients. When the two groups were compared, however, this impact was not substantial enough to notice. The only significant difference was seen when comparisons were made before and after intervention in the intervention group. Satisfaction: $p=.009$ Performance: $p=.028$ Independence: $p=.019$	ADL
S. Akbari et al. (2013) [44]	Cross-sectional	Participants: 27 Age: 51.7 Intervention: - Comparison:-	Higher-order functions, such as categorization, sorting, and reasoning, are related to IADL performance which depends on complicated cognitive abilities. Thinking process was strongly related to IADL total score ( $p=.004$ ). BI, on the other hand, was significantly dependent on motoric function ( $p<.05$ and had no correlation with higher-order processes.	ADL, IADL
J. Lokk et al. (2010) [45]	Randomized, double-blind, placebo-controlled trial	Participants: 100 Age: 64 Intervention: levodopa (LD) and/or methylphenidate (MPH) in combination with physiotherapy Comparison: physiotherapy	Ischemic chronic stroke patients having MPH and/or LD in combination with physiotherapy showed a slight ADL and stroke severity improvement over time. Barthel index: $p=.821$	ADL
N. Dehghan Nayeri et al. (2014) [46]	RCT	Participants: 30 Age: 39.63 intervention, 37.10 control Intervention: family-centered care program Comparison: routine care	Family-centered care programs are able to play a major role in the management of stroke patients' physical and emotional health by empowering patients' relatives and strengthening their ATRs. The experimental group had much greater levels of adherence to the multiple components of the treatment regimens, including rehabilitation, prescriptions, and food regimens, than the control group ( $p<.001$ ).	Health Management

Authors	Study design	Method	Results	Participation Area
H. Soufi Ahmadi et al. (2019) [47]	Non-randomized controlled trial	Participants: 30 Age: control 55.26, intervention 55.23 Intervention: virtual reality Comparison: TOT (task-oriented training) intervention	The intervention group's upper limb motor function, muscular tone, and range of motion were substantially different from the control group's; however, there were no significant differences in any of the group's daily activities ( $p>.05$ ).	ADL
H. Habibzadeh et al. (2007) [48]	Quasi-experimental case-control study	Participants: 60 Age: 45-65 Intervention: Self-care planning Comparison:-	While there was a significant difference in ADL mean scores after the intervention, the post-test ADL mean scores in the case group were 32% higher than the control group. Moreover, there were significant differences among age, sex, muscular weakness, motor disorders and ADL mean scores ( $p<.01$ )	ADL
M. Mahdizadeh et al. (2016) [49]	RCT (PILOT)	Participants: 14 Age: 52 Intervention: group based occupational therapy Comparison :-	In stroke patients, completing daily, craft, and mobility activities in groups might affect their 'performance' and 'satisfaction' levels. Improvement in the performance of daily living tasks as measured by BI shows a significant difference between the two groups ( $p<.05$ ).	ADL

ADL: Activities of daily living;  
IADL: Instrumental activities of daily living

**Table 2:** Results of quality assessment based on PEDro scale

Reference	Eligibility criteria	Random allocation	Hidden allocation	Initial similarity between the groups	Blinded individuals	Blinded therapists	Blinded evaluators	Outcome measures in 85 % of samples	Analysis of intention to treat	Comparison between groups	Effect size	Total score (0/10)
[17]	0	0	0	0	0	0	0	0	0	0	0	0
[18]	1	0	0	0	0	0	0	0	0	0	0	0
[19]	1	0	0	0	0	0	0	0	0	0	0	0
[20]	0	0	0	0	0	0	0	0	0	0	0	0
[21]	1	0	0	0	0	0	0	1	0	0	1	2
[22]	1	1	0	1	0	0	0	1	0	1	1	5
[23]	1	0	0	0	0	0	0	1	0	0	1	2
[24]	1	0	0	0	0	0	0	0	0	0	0	0
[25]	1	0	0	0	0	0	0	0	0	0	0	0
[26]	1	0	0	0	0	0	0	0	0	0	0	0
[27]	0	0	0	0	0	0	0	0	0	0	0	0
[28]	1	0	0	0	0	0	0	0	0	0	0	0
[29]	0	0	0	0	0	0	0	0	0	0	0	0
[8]	1	0	0	0	0	0	0	0	0	0	0	0
[30]	0	0	0	0	0	0	0	0	0	0	0	0
[31]	1	1	0	1	1	0	0	1	0	1	1	6
[32]	1	0	0	0	0	0	0	0	0	0	0	0
[33]	1	1	0	1	1	0	0	1	0	0	0	4
[34]	1	1	0	1	0	0	0	0	0	1	1	4
[35]	1	1	0	0	0	0	0	0	0	1	1	3
[36]	1	1	0	1	0	0	0	1	0	1	1	5
[37]	1	1	0	0	1	0	0	0	0	1	1	4
[38]	1	0	0	0	0	0	0	1	0	0	1	2
[39]	1	0	0	0	0	0	0	0	0	0	0	0
[40]	1	1	0	1	0	0	0	0	0	1	1	4
[41]	1	0	0	0	0	0	0	0	0	0	0	0
[42]	1	1	0	1	0	0	1	0	0	1	1	5
[43]	1	1	0	1	0	0	0	1	0	1	1	5
[44]	1	0	0	0	0	0	0	0	0	0	0	0
[45]	1	1	0	1	1	1	0	1	0	1	1	7
[46]	1	0	0	0	0	0	0	0	0	0	1	1
[47]	1	0	1	0	0	0	0	0	0	0	1	2
[48]	1	1	0	1	0	0	0	0	0	1	1	4
[49]	1	0	0	1	0	0	0	0	0	1	1	3

blind the participants and researchers regarding type of intervention, and most studies did not report the study power. The main goal of rehabilitation intervention is to increase patient's participation in different areas of occupation. In fact, the focus of rehabilitation intervention should be on increasing patient participation in different life areas, rather than simply focusing on performance components such as cognitive, motor, and sensory skills. Most studies identified in this research about Iranian stroke patients' participation in life areas were in the ADL area of participation (N=32), and the lowest number of articles were in the areas of play (N=1), sleep/rest (N=2), and health management (N=3), respectively. From these findings, it can be concluded that: 1) many occupational therapists or other members of the rehabilitation team did not have enough information about other life areas, and some had information only about ADL areas of participation; 2) Occupational therapists spend most of their time in clinical centers on impairment-based approaches, probably because of their unfamiliarity with occupation-based approaches; 3) Therapists do not have enough information about methods and tools for assessing patient participation. These findings are in line with the results of previous studies. For example, research has shown that occupational therapists spend most of their time in clinical centers on impairment-based approaches [50]. Moreover, the results of some studies have shown that occupational therapy interventions for patients in Iran are based mainly on the medical model [51].

Based on the current results, the most influential factors in participation of Iranian stroke patients are:

**Field of ADL:** Cognitive rehabilitation programs with motor rehabilitation, gait training, RehaCom cognitive rehabilitation software, training for stroke survivors and their families, social and financial support, social insurances, physical function, mood, access to caregiving services, knowledge and skills regarding adaptive strategies, developing socio-economic supports, exteroceptive and proprioceptive sensory stimulation, biofeedback accompanied by routine occupational therapy, family-centered empowerment programs, self-care education, home-based exercise rehabilitation, action observation and imitation, sensory-motor training, home nursing care plan, client-centered occupational therapy, motoric function, virtual reality, and group-based occupational therapy can be mentioned as the facilitators of the participation of Iranian stroke patients in ADL, and factors comprising depression, physical dysfunction, cognitive disorders, and intensity of neurological impairment can be mentioned as barriers to participation of Iranian stroke patients in ADL [9, 17-25, 28-39] [41-45, 47-49]. These findings are consistent with the results of previous studies [52-56]. For example, Stolwyk et al. found that post-stroke cognitive impairment is related to early and long-term activity and involvement limits [55]. According to the findings of the Laver study, virtual reality may be effective in enhancing upper limb function and performance of everyday life tasks [56].

**Field of IADL:** Cognitive rehabilitation programs with motor rehabilitation, appropriate discharge plans, social and financial support, social insurances and training

programs for the stroke survivors and their families, physical function, mood, access to caregiving services, sensory-motor training, and higher-order functions such as categorization, sorting, and reasoning can be mentioned as the facilitators of the participation of Iranian stroke patients in IADL [8, 9, 17, 18, 22, 35, 38, 39, 44]. Some previous studies have reported similar results [57-60]. Ghaffari et al. showed that old age, cognitive impairment, and depression can make patients dependent on IADL participation [60].

**Field of Play:** Only one study was found in the field of play; however, the provision of efficient rehabilitation services in Iran for participation prompting requires attention to both "doing" and "identity" in rehabilitation interventions, so as to enable individuals to adapt to their new lives after stroke and to "live their lives" [17].

**Field of leisure:** Physical function, mood, and access to caregiving services can be mentioned as the facilitators of the participation of Iranian stroke patients in leisure activities, and factors comprising physical dysfunctions, inappropriate daily plan for leisure activities, changes in mood, and facing economic problems can be mentioned as barriers of participation of Iranian stroke patients in leisure activities [8, 17, 25]. These results agree with the literature. Based on the results of Im Yi, weakness and poor balance, lack of transportation, and expenses were the most significant impediments to participation in leisure activities [61].

**Field of rest/sleep:** Based on the results, Tai Chi can be considered a useful intervention to improve women's inflammatory status with stroke [17, 40]. Although few studies have investigated the sleep of Iranian stroke patients, several studies have recently been done on the sleep of stroke patients in other countries [62-64]. The results of these studies have shown that social support has a positive effect on sleep quality and, in contrast, anxiety and depression symptoms have a negative effect on sleep quality.

**Field of Education:** As facilitators of Iranian stroke patients' engagement in education, suitable discharge plans, social and financial assistance, social insurances, and training program for stroke survivors and their families might be noted. Education and skills related to stroke care and the recovery process should be provided and transferred from hospital to home so as to better understand how patients should deal with problems related to stroke. To provide a more supportive approach to rehabilitation services and provide better educational programs for stroke patients, it is also necessary to develop socio-economic supports [8, 9, 17, 30].

**Field of Work:** Stroke survivors and their families require training to learn how to live with and overcome the continuous obstacles of daily life and return to work after a stroke. Physical dysfunction is a serious worry for both survivors and their family caregivers [8, 9, 17, 25]. For example, the results of Hofgren's study showed that recovery of cognitive function is a near-significant factor for return to work [53].

**Field of social participation:** The research shows that social involvement declines after a stroke, and this reduction is impacted by a variety of factors, including

functional level, cognitive state, depressive symptoms, and motor impairments. Furthermore, insufficient financial and social support and insufficient education and training to know how to cope with the new situation can be mentioned as inhibitors of the participation of Iranian stroke patients in social participation [8, 9, 17, 25, 30].

**Field of Health management:** Patients' adherence to rehabilitation, participation in the treatment process, and quality of life may all be improved by increasing their awareness of rehabilitation effectiveness, improving communication with healthcare practitioners, and having appropriate insurance and social support. Family plays an important role in handling elderly stroke patients' ADL dependency [17, 26, 46].

## Conclusion

The main outcome of rehabilitation services is participation of stroke patients in all areas of occupation. Based on OTPF, there are 9 areas of occupation, namely ADL, IADL, work, play, leisure, education, rest/sleep, social participation, and health management, all of which are important in increasing the QOL of stroke patients, with none being superior to another. The current study has shown that in Iran, many researchers do not pay attention to the participation of stroke patients, and most studies have focused solely on the motor, sensory, or cognitive components of stroke patients. Among the various areas of participation, studies have placed the greatest focus on ADL, paying little attention to other areas of participation. Therefore, it is suggested that researchers focus on other areas of participation of Iranian stroke patients, because they affect patients' quality of life and, ultimately, their satisfaction.

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