Predicting the functional independence during the recovery phase for poststroke patients

Sadeq AL-Fayyadh

Abstract

Background: Successful recovery of stroke survivors can be challenging. However, when targeted functional capacities are predicted early in the recovery phase, necessary nursing intervention can be initiated aiming at supporting the client moving forward in the rehabilitation journey.

Aim(s): This study aimed to evaluate stroke self-efficacy of poststroke patients and identify the differences in stroke self-efficacy level among some relevant variables.

Design: A descriptive cross-sectional design was employed to achieve the aforementioned objectives.

Methods: A purposive sample of 207 poststroke patients who were recovering from stroke in three major teaching hospitals at Baghdad city were recruited to participate in the study. Data collection process started 3 November 2016 –15 May 2017. Inclusion criteria embraced stroke patients who were adult, have Glasgow Coma Scale score 14–15, capable of giving written or verbal consent. The modified version of the stroke self-efficacy questionnaire was used for data collection.

Results: A significant statistical difference at the $p$-value $\leq 0.05$ level, in stroke self-efficacy, was verified among subjects’ age, residency, stroke incidence and patient’s knowledge about his/her stroke medical diagnosis.

KEYWORDS
functional capacity, independence, nursing, rehabilitation, stroke, stroke-related-self-efficacy

1 | INTRODUCTION

Both in developing and developed nations, non-communicable chronic diseases (NCDs) are a substantial public health threat of the 21st century (Beech, 2013). Forty million people every year are losing their lives as a direct result of NCDs. This constitutes 70% of the mortality rate on a global level (World Health Organization, 2017). Stroke, formerly known as cerebrovascular accident (CVA), is one of the most alarming NCDs. Stroke devastating consequences can endanger all essential facets of patient’s life. Activities of daily living (ADL), social relationships and professional capacities are some examples of patient’s life aspects that can be negatively influenced by both stroke’s long- and short-term consequences (Feigin, Norrving, & Mensah, 2017). All the previously mentioned overwhelming stroke-related consequences can cause a substantial deterioration in the perceived client’s life quality, to the extent that patients could lose confidence in their potentials and believe that they would not sustain a productive and meaningful life. Therefore, stroke management should start as soon as possible as indicated by the literature. The rehabilitation journey must commence directly after confirming the medical diagnosis, starting from managing stroke-related life-compromising problems (Roshanzamir, 2016).
This necessitates an active engagement in fulfilling the planned rehabilitation goals of all the involved parties, particularly the patient him or herself. High stroke self-efficacy is connected with better clinical outcome (Korpershoek, van der Bijl, & Hafsteinsdóttir, 2011). Therefore, this research was designed to assess the levels of stroke survivor’s self-efficacy in terms of its major pillars, functional capacity and self-management. The main research questions that the study was developed to answer were as follows: What is the level of stroke self-efficacy of poststroke patients? and What are the differences in stroke self-efficacy level among some demographic and clinical variables of patients recovering from stroke?

2 | BACKGROUND

The unprecedented increase of ageing population percentage can and will aggravate the situation at the level of the global public health arena. This necessitates both an effective and urgent intervention to help the huge numbers of stroke patients dealing with their multi-dimensional health problem by facilitating a planned recovery under the umbrella of healthy transition. Therefore, extending a helping hand to stroke patients aiming at improving their functional independence is vital during the early stages of their acute illness. The literature suggested that functional independence of patients with chronic conditions such as stroke can be predicted by assessing patient’s self-efficacy (Torkia, 2014). Unfortunately, scientific inquiries that have explored self-efficacy in a Middle Eastern stroke population are scarce, which justifies this research endeavour, aiming basically at attaining a more inclusive, clinically pertinent comprehension of self-efficacy during the recovery phase in the aforementioned population. Self-efficacy has been defined as person’s belief in his/her ability in organizing, managing and executing the steps that are necessary to achieve the targeted goal(s) (Jones, Partridge, & Reid, 2008). Based on the aforementioned definition, it is crucial to assess stroke self-efficacy to predict the independence level in terms of functional capacities and self-management dimensions in poststroke patients. This would be helpful to them in terms of moving forward in the rehabilitation program. Assessing stroke patient’s self-efficacy level is the starting point of applying nursing therapeutics. As a result, it is mandatory to assess stroke patient’s self-efficacy level as an infrastructure of the rehabilitation journey. The outcome of the planned assessment would be essential in designing and implanting tailored nursing therapeutics (Tables 1, 2 and 3).

3 | METHODS

3.1 | Study design, sample and setting

A descriptive cross-sectional design study was conducted on 207 patients who were recovering from stroke in three major teaching hospitals at Baghdad city from 3 November 2016–15 May 2017. As it consistent with nursing studies, the study targeted an alpha level of 0.05, an effect size of 0.891, a power of 80 and a sample size of 207 patients. Table 1 demonstrates the demographic characteristics and stroke-related clinical information of patients recovering from stroke. The underlined numbers represent the highest percentages of the selected variables. In which, more than half (56.0%) of the study sample were males. More than a quarter (26.1%) of the study sample were classified as elderly individuals within 60–69 years. In terms of residency, the highest percentage (64.7%) of the study sample were suburbanites. (37.7%) of the study sample were unable to read and write. Of equal importance, (78.7%) of the study sample were diagnosed with ischaemic stroke. More than three quarters (81.2%) of the study sample had their first stroke at the time of data collection. Time since being diagnosed with stroke was a main variable, whereas (54.1%) of the study sample categorized under the umbrella of acute stage of recovery, which was “less than 30 days”. Of equal importance, (37.2%) of the patients were not definite about their specific stroke type.

| Variable                          | f  | %  |
|----------------------------------|----|----|
| Gender                           | 207| 100|
| Male                             | 116| 56.0|
| Female                           | 91 | 44.0|
| Age                              |    |    |
| 29–39                            | 20 | 9.7 |
| 40–49                            | 47 | 22.7|
| 50–59                            | 46 | 22.2|
| 60–69                            | 54 | 26.1|
| >70                              | 40 | 19.3|
| Residency                        |    |    |
| Rural                            | 73 | 35.3|
| Urban                            | 134| 64.7|
| Education                        |    |    |
| Not read nor write               | 78 | 37.7|
| Reads & writes                   | 23 | 11.1|
| Primary school                   | 42 | 20.3|
| Secondary school                 | 18 | 8.7 |
| High school                      | 30 | 14.5|
| Bachelor degree                  | 16 | 7.7 |
| Stroke type                      |    |    |
| Haemorrhagic                     | 44 | 21.3|
| Ischaemic                        | 163| 78.7|
| Stroke incidence                 |    |    |
| 1st time                         | 168| 81.2|
| 2nd time                         | 30 | 14.5|
| 3rd time or more                 | 9  | 4.3 |
| Stroke duration                  |    |    |
| <30 days                         | 112| 54.1|
| 3–6 months                       | 58 | 28.0|
| ≥12 months                       | 37 | 17.9|
| Knowledge about medical diagnosis|    |    |
| Knowledgeable                    | 55 | 26.6|
| Unknowledgeable                  | 75 | 36.2|
| Not sure                         | 77 | 37.2|
| Total                            | 207| 100|

Note: The underlined numbers represent the highest percentages of the selected variables. In which, more than half (56.0%) of the study sample were males. More than a quarter (26.1%) of the study sample were classified as elderly individuals within 60–69 years. In terms of residency, the highest percentage (64.7%) of the study sample were suburbanites. (37.7%) of the study sample were unable to read and writes. Of equal importance, (78.7%) of the study sample were diagnosed with ischaemic stroke. More than three quarters (81.2%) of the study sample had their first stroke at the time of data collection. Time since being diagnosed with stroke was a main variable, whereas (54.1%) of the study sample categorized under the umbrella of acute stage of recovery, which was “less than 30 days”. Of equal importance, (37.2%) of the patients were not definite about their specific stroke type.
The modified version of the stroke self-efficacy scale (Riazi, Aspden, & Jones, 2014) was selected to achieve the study objectives. The 13-item stroke self-efficacy scale was found to have satisfactory feasibility and face validity to be used during the stroke recovery phase. Cronbach alpha is 0.90 signifying a satisfactory internal consistency and criterion validity is good, $r = 0.803$, $p < 0.001$. The stroke self-efficacy questionnaire consisted of two sections: the first section focused on socio-demographic characteristics and stroke-related clinical variables. The second section included the stroke self-efficacy scale, where 13 items focused on functional independency of stroke clients. This scale was rated based on the following numerical range (0–3), subjects in this study were given an opportunity to rate their own confidence “self-efficacy” level based on the aforementioned scale continuum. Whereas “0” stands for “not at all confident in his or her functional independence,” “3” stands for “very confident in his or her functional independence.” The questions focused on examining patients’ confidence about their physical ability doing some tasks that maybe challenging since their most recent stroke attack. Subjects were asked to encircle the numerical value on the scale form that shows how certain they were in doing the tasks despite stroke. The level of stroke self-efficacy was assessed and consequently classified in to three levels, which are low, moderate and high.

3.3 Ethical considerations

The research ethics committee at the University of Baghdad, College of Nursing consented the study proposal. All the collected data during the study course were recorded in such an approach that subject’s identities remain confidential. A password-protected file was used to store the study related-electronic data. The collective form of the study findings is the only part that is disseminated in the study report. All the informed consents were signed by the subjects, where they had been informed that their participation is completely voluntary and they have the right to read, discuss and question the study protocol, the benefits and risks of participation with the researcher.

4 DISCUSSION

It is crucial to recognize that the transition from partial or complete dependence to full independence is a process that progresses gradually over time (Buscherhof, 1998). The quality and the speed of this progress depend on many factors. Examples are as follows: the condition’s severity, availability of resources and most importantly the client’s attitude in terms of adaption to neurologic deficits. Therefore, it is helpful to concede that complex situations which are related to stroke clients “vulnerability in terms of health-illness
### TABLE 3 Differences in Stroke Self-Efficacy among three or more levels variables

| Variable                | Categories                  | N    | Mean Rank | χ²    | df | Asymp. Sig. |
|-------------------------|-----------------------------|------|-----------|-------|----|-------------|
| Self-efficacy           | Age                         |      |           |       |    |             |
|                         | 29–39                       | 20   | 111.85    | 12.914| 4  | 0.012       |
|                         | 40–49                       | 47   | 129.80    |       |    |             |
|                         | 50–59                       | 46   | 95.75     |       |    |             |
|                         | 60–69                       | 54   | 94.35     |       |    |             |
|                         | 70–more                     | 40   | 92.28     |       |    |             |
| Educational level       | Not read nor write          | 78   | 95.64     | 3.652 | 5  | 0.601       |
|                         | Reads & writes              | 23   | 102.96    |       |    |             |
|                         | Elementary school           | 42   | 109.44    |       |    |             |
|                         | Secondary school            | 18   | 110.97    |       |    |             |
|                         | Preparatory school          | 30   | 104.90    |       |    |             |
|                         | University level degree     | 16   | 122.44    |       |    |             |
| Knowledge about medical diagnosis | Knowledgeable               | 55   | 115.28    | 7.845 | 2  | 0.020       |
|                         | Unknowledgeable             | 75   | 111.10    |       |    |             |
|                         | Not sure                    | 77   | 89.03     |       |    |             |
| Stroke incidence        | 1st time                    | 168  | 106.89    | 6.945 | 2  | 0.031       |
|                         | 2nd time                    | 30   | 103.13    |       |    |             |
|                         | 3rd time or more            | 9    | 53.00     |       |    |             |
| Stroke duration         | <30 days                    | 112  | 104.67    | 0.648 | 2  | 0.723       |
|                         | 3–6 months                  | 58   | 99.36     |       |    |             |
|                         | >12 months                  | 37   | 109.24    |       |    |             |

Note: Kruskal-Wallis Test reveals that stroke patients who are within 40–49 years age group, with Bachelor degree, and have been affected by stroke for more than a year, have a better stroke self-efficacy than that of other groups. Table 3 also shows that there is a statistically significant difference in patients’ stroke self-efficacy among the age groups (χ² = 12.914, df = 4, p-value = 0.012). However, there is no a statistically significant difference in patients’ stroke self-efficacy among the educational level groups (χ² = 3.652, df = 5, p-value = 0.601), and stroke duration groups (χ² = 0.648, df = 2, p-value = 0.723). Of equal importance, knowledgeable patients about their stroke type and patients who are affected by stroke for the first time in their life have a better stroke self-efficacy than that of other groups. A statistically significant difference was detected in patients’ stroke self-efficacy among the knowledge about stroke specific type groups (χ² = 7.845, df = 2, p-value = 0.020) and stroke incidence groups (χ² = 6.945, df = 2, p-value = 0.031).
In the current study, stroke-related self-efficacy levels were assessed among stroke patients. It was observed that the highest percentage of the study subjects were classified under the category of lowest stroke-related self-efficacy, reflecting low functional independency. This was calculated based on the cut of point (0-39) whereas 0 represents the lowest possible score, 39 is the highest possible score. Accordingly, Levels of self-efficacy were classified in the following: low = 0-13, moderate = 13.1-26, and high = 26.1-39. The percentages of each level were represented by the pie chart to help readers seeing the whole picture of the study population in terms of their confidence level. Of equal importance, the mean score for level of subjects’ confidence of doing the tasks in spite of being affected by stroke was 10.48 signifying low overall self-efficacy level

**FIGURE 1** The highest percentage of the study subjects were classified under the category of lowest stroke-related self-efficacy, reflecting low functional independency. This was calculated based on the cut of point (0-39) whereas 0 represents the lowest possible score, 39 is the highest possible score. Accordingly, Levels of self-efficacy were classified in the following: low = 0-13, moderate = 13.1-26, and high = 26.1-39. The percentages of each level were represented by the pie chart to help readers seeing the whole picture of the study population in terms of their confidence level. Of equal importance, the mean score for level of subjects’ confidence of doing the tasks in spite of being affected by stroke was 10.48 signifying low overall self-efficacy level.
intervention and its positive impact on improving stroke patient’s functional capacity in terms of ADL and health-related quality of life (Kvigne, Kirkevold, & Gjengedal, 2005).

Aiming basically at judging particular realms of poststroke independent functioning, such as Activities of Daily Living (ADL) and self-management tasks. The study unidimensional tool was used to highlight the aforementioned realms. Reflecting on ADL, which are among the most basic and independent functions for human beings. However, they may pose a significant challenge to stroke patients. Payne, Stagnitti, Hooke, and Hitch (2015) reported that more than tree quartets of stroke patients may suffer from varying degrees of eating difficulties, which may jeopardize their independence of performing these basic activities. Despite this fact, persons are more likely to engage in a rigorous attempt to satisfy the luck of basic needs, such as hunger or thirst, aiming at achieving homeostasis (Timmerman & Acton, 2001). Of equal importance, coping with stroke as an incapacitating disease can be highlighted by the multi-faceted catastrophic effects of stroke on patient’s life. In her theory’s introductory framework, Meleis (2010) reported the feelings of desperation experienced by client, defining her stroke-related hemiparesis as, “I feel like I have a dead body in bed with me” (p.27). Similarly, Strum et al., (2004) captured stroke clients’ description about their life quality after being affected by this disease as, “equivalent to, or worse than, death” (p.2342). All that may indicate transition failure in light of low stroke-related self-efficacy. Therefore, it is important to note that stroke clients are extremely vulnerable living under the dull shadows of their health problem, unless a specialized caring hand help them assuming more positive attitude facing the disease and smoothly transitioning towards fast and effective recovery. Nurses are integral to facilitate transitions, as they are key participants in the public health. Hartigan (2012) stressed that nurses represent the core of the stroke interdisciplinary rehabilitation team through their advanced communication skills that enable stroke clients to gain self-awareness, self-healing and “[empowering] the process of recovery through collaborative and meaningful integration of psychosocial needs, as well as physical functioning during the course of rehabilitation goal setting” (p. 69).

One principle objective of this study was to identify the differences in stroke self-efficacy among some relevant variables. Highlighting these statistical differences would be of great clinical value when designing stroke-related self-efficacy interventions. A significant statistical difference in stroke self-efficacy was verified among subjects’ age, residency, stroke incidence and patient’s knowledge about his/her stroke medical diagnosis. The literature showed that the dominant age group of clients with low self-efficacy was less than 75 years (Andersson, Kamwendo, & Appelros, 2008). This comes along with the current study findings. Such findings can be best explained by the clinical fact that even minor strokes in senior person may lead to significant multisystem deficits, including cognitive, locomotive and sensory deficits. Which may influenced stroke patients goal attainment, outcome expectations and most importantly their self-efficacy (Ireland & Arthur, 2006). This should not discourage healthcare providers to enhance older adult’s self-efficacy considering the fact that ageing is not a synonym of a disease. Instead, healthcare providers should deal with ageing as a biological process where they should support self-efficacy aiming at achieving full independence (Rattan, 2014). Relative to the residency variable, Roos, Potgieter, and Temane (2013) have concluded that living environment has an impact on person’s self-efficacy level as the findings of their research revealed that metropolitans show up greater levels of self-efficacy when equalled with countryside residents. This can be explained by that countryside residents had a perception of living in a poorer quality of life when compared with metropolitans. It is true that city living offers many advantages, such as better health care and its reflections on life quality; yet, rapid growing urbanization can intensify major health-related risks and propose additional health hazards (WHO, 2010). Regarding to stroke incidence, the literature focused on presenting first time stroke patients experience, overlooking others who were affected repeatedly by it (Jones, Mandy, Partridge, 2009; Omu & Reynolds, 2013). This finding justifies an in-depth analysis of this segment of the targeted population. This low self-efficacy in those with recurrent stroke can be explained by the poor life quality considering stroke tragic physical, social and psychological consequence (Hiraga, ; Wang et al., 2016). Finally, subjects who were knowledgeable about their medical diagnosis “stroke type” had better stroke-related self-efficacy than those who were completely unaware or uncertain about their specific stroke type. In their study, Denny, Vahidy, Vu, Sharrief, and Savitz (2017) concluded that self-efficacy of stroke patients was positively affected by their knowledge about their health problem during the acute phase of their recovery. Marks, Allegrante, and Lorig (2005) explained that because self-efficacy is modifiable in nature, thus knowledge may positively affect it in a way that can be reflected on stroke patient’s clinical outcome. Therefore, they recommended that patient’s literacy about their chronic conditions such as stroke must be enhanced in a way that boosts their self-efficacy.

5 | CONCLUSION

Low stroke self-efficacy was evident predicting low level of autonomous functional capacities among the study sample. Subjects’ age, residency, knowledge about stroke specific medical diagnosis and stroke incidence were the most influential factors on the stroke patients related self-efficacy, consequently on their functional independence during the recovery phase. Therefore, it is highly recommended that comprehensive rehabilitative programs should be tailored according to stroke patient’s self-efficacy, which reflects the accurate level of physical independence. Additionally, both self-efficacy and its related functional independence are complex constructs that cannot explained by the contribution of single or mutable variables. In fact, they are the outcome of the interaction among the physical, psychosocial, demographic and clinical characteristics. Therefore, a mixed methods study is mandate considering its ability to highlight other variables that may contribute in explaining stroke self-efficacy.
Being the patients official advocate, nurses can play a pivotal role with stroke patients by facilitating personal readjustment aiming at regaining full independence. However, under the current critical circumstances of Iraq, this would be challenging. Therefore, the WHO is invited to boost its valuable support to Iraqi nurses through mentoring and advocating nursing role in the multidisciplinary team of stroke patient care.

ACKNOWLEDGEMENTS

The author would like to appreciate all the genuine efforts that had been made by the hospitalized stroke patients, senior students at the School of Nursing, University of Baghdad, and the nursing staff in the Medical City Complex. This research work would not be possible without your support!

CONFLICT OF INTEREST

None.

ORTCID

Sadeq AL‐FAYYADH https://orcid.org/0000-0002-1194-1143

REFERENCES

Al‐Asadi, J. N., & Habib, H. A. (2014). Risk factors and 30‐day case fatality of first‐ever stroke in Basrah, Iraq. *Nigerian Medical Journal*, 55(3), 209–213. https://doi.org/10.4103/0300‐1652.132041

Al‐Fayyadh, S., & Mohammed, W. (2010). Patients’ knowledge about chronic diseases towards risk factors and warning signs of stroke. *Iraqi National Journal of Nursing Specialties*, 2(23), 1–14. Retrieved from http://injns.uobaghdad.edu.iq/index.php/INJS/article/view/76

Andersson, A. G., Kamwendo, K., & Appelros, P. (2008). Fear of falling in stroke patients: Relationship with previous falls and functional characteristics. *International Journal of Rehabilitation Research*, 31(5), pp. 261–264. https://doi.org/10.1097/MRR.0b013e3282fba390

Becker, K. J., Fruin, M. S., Gooding, T. D., Tirschwell, D. L., Love, P. J., & Mankowski, T. M. (2001). Community‐based education improves stroke knowledge. *Cerebrovascular Diseases*, 11(1), 34–43. https://doi.org/10.1159/000047609

Beech, B. M. (2013). Chronic disease: Significant public health threat of the 21st century. *Family & Community Health*, 36(2), 95–96. https://doi.org/10.1097/FCH.0b013e3182867034

Benamer, H. T., & Grosset, D. (2009). Stroke in Arab countries: A systematic literature review. *Journal of the Neurological Sciences*, 284(1), 18–23. https://doi.org/10.1016/j.jns.2009.04.029

Buscherhoff, J. R. (1998). From abled to disabled: A life transition. *Topics in Stroke Rehabilitation*, 5(2), 19–29. https://doi.org/10.1310/68M0‐HTRY‐V9JK‐1NKN

Denny, M. C., Vahidy, F., Vu, K. Y. T., Sharrief, A. Z., & Savitz, S. I. (2017). Video‐based educational intervention associated with improved stroke literacy, self‐efficacy and patient satisfaction. *PLoS ONE*, 12(3), 1–12. https://doi.org/10.1371/journal.pone.0171952

Feigin, V. L., Lawes, C. M. M., Bennett, D. A., & Anderson, C. S. (2003). Stroke epidemiology: a review of population‐based studies of incidence, prevalence, and case‐fatality in the late 20th century. The *Lancet Neurology*, 2(1), 43–53. https://doi.org/10.1016/S1474‐4422(03)00266‐7

Feigin, V. L., Norrving, B., & Mensah, G. A. (2017). Global burden of stroke. *Circulation Research*, 120(3), 439–448. https://doi.org/10.1161/CIRCRESAHA.116.308413

Grove, S. K., Burns, N., & Gray, J. R. (2013). The practice of nursing research: Appraisal, synthesis and generation of evidence. St. Louis, MO: Elsevier.

Hartigan, I. (2012). Goal setting in stroke rehabilitation: Part 1. *British Journal of Neuroscience Nursing*, 8(2), 65–69. https://doi.org/10.12968/bjn.2012.8.2.65

Hiraga, A. Perception of Recurrent Stroke Risk among Stroke Survivors. *Neuroepidemiology*, 37(2), 88–89. https://doi.org/10.1159/000330354

Ireland, S. E., & Arthur, H. M. (2006). Integrating self‐efficacy and aging theories to promote behavior change and reduce stroke risk. *Journal of Neuroscience Nursing*, 38(4), 300–308.

Jones, F., Mandy, A., & Partridge, C. (2009). Changing self‐efficacy in individuals following a first‐time stroke: Preliminary study of a novel self‐management intervention. *Clinical Rehabilitation*, 23(6), 522–533. https://doi.org/10.1177/0269215508101749

Jones, F., Partridge, C., & Reid, F. (2008) The Stroke Self‐Efficacy Questionnaire: measuring individual confidence in functional performance after stroke. *Journal of Clinical Nursing*, 17(7b), 244–252. https://doi.org/10.1111/j.1365‐2702.2008.02333.x

Korpershoek, C., van der Bijl, J., & Hafsteinsdóttir, T. B. (2011). Self‐efficacy and its influence on recovery of patients with stroke: a systematic review. *Journal of Advanced Nursing*, 67(9), 1876–1894. https://doi.org/10.1111/j.1365‐2648.2011.05659.x

Kvigne, K., Kirkevold, M., & Gjengedal, E. (2005). The nature of nursing care and rehabilitation of female stroke survivors: The perspective of hospital nurses. *Journal of Clinical Nursing*, 14(7), 897–905. https://doi.org/10.1111/j.1365‐2702.2005.01164.x

Lewin, A., Jöbges, M., & Werheid, K. (2013). The influence of self‐efficacy, pre‐stroke depression and perceived social support on self‐reported depressive symptoms during stroke rehabilitation. *Neuropsychological Rehabilitation*, 23(4), 546–562. https://doi.org/10.1080/09602011.2013.794742

Marks, R., Allegrante, J. P., & Lorig, L. (2005). A review and synthesis of research evidence for self‐efficacy‐enhancing interventions for reducing chronic disability: Implications for health education practice (part II). *Health Promotion Practice*, 6(2), 148–156. https://doi.org/10.1177/1524839904266792

Meleis, A. I. (Ed.). *Transitions Theory*. New York: Springer. 2010.

Meleis, A. I., & Tranegenstein, P. A. (1994). Facilitating transitions: Redefinition of the nursing mission. *Nursing Outlook*, 42(6), 255–259. https://doi.org/10.1016/0029‐6594(94)90045‐0

Omu, O., & Reynolds, F. (2013). Life satisfaction and self‐efficacy in patients affected by a first stroke living in Kuwait: A two‐phase study. *Physiotherapy Theory and Practice*, 29(6), 443–456. https://doi.org/10.1080/09602011.2012.752057

Pang, M. Y., Eng, J. J., & Miller, W. C. (2007). Determinants of satisfaction with community reintegration in older adults with chronic stroke: Role of balance self‐efficacy. *Physical Therapy*, 87(3), 282–291. https://doi.org/10.2522/ptj.20060142

Payne, J., Stagnitti, K., Hooke, E., & Hitch, D. (2015). Achieving eating independence in an acute stroke ward: Developing a collaborative care plan. *International Journal of Therapy and Rehabilitation*, 22(3), 111–117. https://doi.org/10.12968/ijtir.2015.22.3.111

Pierce, C., Fahs, P. S., Dura, A., Fronzcek, A., Morgan, L. L., Leppert, T., … Buel, V. (2011). Raising stroke awareness among rural dwellers with a fact for action to stroke treatment‐based educational program. *Applied Nursing Research*, 24(2), 82–87. https://doi.org/10.1016/j.apnr.2009.04.001

Rattan, S. I. (2014). Aging Is Not a Disease: Implications for Intervention. *Aging and Disease*, 5(3), 196–202. https://doi.org/10.14336/AD.2014.0500196
Riazi, A., Aspden, T., & Jones, F. (2014). Stroke Self-efficacy Questionnaire: A Rasch-refined measure of confidence post stroke. *Journal of Rehabilitation Medicine.*, 46(5), 406–412. https://doi.org/10.2340/16501977-1789

Robinson-Smith, G., & Pizzi, E. R. (2003). Maximizing stroke recovery using patient self-care self-efficacy. *Rehabilitation Nursing*, 28(2), 48–51. https://doi.org/10.1002/j.2048-7940.2003.tb02028.x

Roos, S. M., Potgieter, J. C., & Temane, M. Q. (2013). Self-efficacy, collective efficacy and the psychological well-being of groups in transition. *Journal of Psychology in Africa.*, 23(4), 561–567. https://doi.org/10.1080/14330237.2013.10820668

Roshanzamir, S. (2016). Post stroke rehabilitation. *Galen Medical Journal*, 5(S1), 62–65. Retrieved from http://www.gmj.ir/index.php/gmj/article/view/584

Schumacher, K. L., & Meleis, A. I. (1994). Transitions: A central concept in nursing. Image: The. *Journal of Nursing Scholarship*, 26(2), 119–127.

Sturm, J. W., Donnan, G. A., Dewey, H. M., Macdonell, R. A., Gilligan, A. K., Srikanth, V., & Thrift, A. G. (2004). Quality of life after stroke the North-East Melbourne Stroke Incidence Study (NEMESIS). *Stroke*, 35(10), 2340–2345. https://doi.org/10.1161/01.STR.0000149777.8520.3b

Timmerman, G. M., & Acton, G. J. (2001). The relationship between basic need satisfaction and emotional eating. *Issues in Mental Health Nursing*, 22(7), 691–701. https://doi.org/10.1080/01612840119628

Torkia, C. (2014). Development of the Self-Efficacy Scale for Performing Life Activities Post Stroke. Canada: McGill University. Retrieved from http://digitool.library.mcgill.ca/thesisfile121213.pdf

Wang, A., Wu, L., Wang, X., Zhao, X., Wang, C., Liu, L., ... National Stroke Registry Investigators. (2016). Effect of recurrent stroke on poor functional outcome in transient ischemic attack or minor stroke. *International Journal of Stroke*, 11(7), NP80-NP80. https://doi.org/10.1177/1747493016641954

World Health Organization (2010). Urbanization and health. *Bulletin of the World Health Organization*, 88(4), 241–320. https://doi.org/10.2471/BLT.10.010410

World Health Organization (2017). Noncommunicable diseases factsheet. Retrieved from http://www.who.int/mediacentre/factsheets/fs355/en/

*How to cite this article:* AL-Fayyadh S. Predicting the functional independence during the recovery phase for poststroke patients. *Nursing Open*. 2019;6:1346–1353. [https://doi.org/10.1002/nop2.335](https://doi.org/10.1002/nop2.335)