Awareness and satisfaction of therapeutic goals on functional status in persons with hemiparetic stroke

Si-Nae Ahn[a], Jeong-Weon Lee[b], Sujin Hwang[c]

[a]Department of Occupational Therapy, College of Health and Medical Science, Cheongju University, Cheongju, Republic of Korea
[b]Department of Occupational Therapy, Yeoju Institute of Technology, Yeoju, Republic of Korea
[c]Department of Physical Therapy, Division of Health Science, Baekseok University, Cheonan, Republic of Korea

Objective: Setting therapeutic goals assist to identify patient priorities and predict problem that may arise in performing daily and functional activities. Goal setting is associated with improved rehabilitation outcomes in individuals with hemiparetic stroke. This study was conducted to assess the effects of having awareness and satisfaction of goals on the functional status of individuals with hemiparetic stroke.
Design: Cross-sectional study.
Methods: Eighty-one people who had been diagnosed with stroke participated in this study. The study was conducted through a face-to-face surveys to identify participants' awareness and satisfaction of goals and standard assessment tools were used to evaluate patients' functional status. This study measured functional status through three clinical measures including the manual function test (MFT), Berg Balance scale (BBS), and modified Barthel index (MBI).
Results: In participants with hemiparetic stroke, the MBI, BBS, and MFT scores were significantly higher in the participants who were aware of the therapeutic goal than in those who were unaware ($p<0.05$). The MBI, BBS, and MFT scores were not significant between the participants who were satisfied with the goal and those who were unsatisfied.
Conclusions: This study suggests that having awareness in therapeutic goal-setting could lead to improvement of functional status in those with hemiparetic stroke. This study highlights how goal-setting can have a positive effect on persons with hemiparetic stroke.

Key Words: Awareness, Personal satisfaction, Stroke

Introduction

Stroke is a major health problem worldwide [1]. In stroke survivors, the various physical, cognitive, behavioral, and emotional problems associated with stroke can negatively affect their participation in the rehabilitation process from exanimation to social integration. It is important to consider the rehabilitation process in terms of participation of stroke survivors. In the rehabilitation practice framework, including domain and process, patients' participation subsequently leads to their participation in their activities of daily living (ADLs). Therefore, participation naturally occurs when pa-

tient are actively involved in carrying out their various occupations or ADLs and when they find the activities purposeful and meaningful [2-4].

Active client participation in goal setting is important in rehabilitation process and relevant to client-centered practice, wherein client goals are the center of all assessments and interventions. Listening to the client, enabling client choice, respecting client's values, and fostering hope are also integral parts of the client-centered practice approaches [5-7].

Evidence from rehabilitation research studies links active client participation in goal setting for stroke rehabilitation to

improve outcomes [8,9].

Active participation in goal setting have been reported to contribute toward the development of self-awareness, self-observation, and self-monitoring, and he improvement of self-efficacy [10,11]. Furthermore, awareness and satisfaction of rehabilitation goals setting were found to be associated with increased independence in identifying and modifying goals in the future [10]. A systematic review of goal setting in stroke rehabilitation by Rosewilliam *et al.* and colleague reported that, in practice, clients were passive participants, and client inclusion in goal setting was uncommon. To the best of our knowledge, no studies have examined the relationship between functional status and the awareness and satisfaction of therapeutic goals in patients with hemiparetic stroke [9].

The overall aims of this study were, therefore, to investigate whether awareness and satisfaction of stroke rehabilitation goal setting has an effect on patients' functional status. This association was determined by assessing patients' dependency in ADLs, upper and lower extremities functions, and balance ability [2,3,12]. We hypothesized that individuals with hemiparetic stroke would have a less functional status if there is little patient awareness and satisfaction of therapeutic goals in this study.

Methods

Participants

Eighty-one individuals who had a diagnosis of stroke participated in this study. The inclusion criteria for participants are as follows: persons should (1) be diagnosed to have had first stroke; (2) have scored above 19 points in the Mini-mental state Examination; (3) have no problems in verbal communication; (4) have set the goal of desired therapeutic performance; and (5) have agreed to participate in this study. Table 1 shows the characteristics of the participants in this study. This study was conducted after receiving approval from the Institutional Review Board Committee of Baekseok University (IRB No. BUIRB-201608-HR-022) (Table 2).

Protocol

First, this study selected participants using the Mini-Mental State Examination to assess their cognitive functions, due to selecting their rehabilitation goal and identifying satisfaction for therapeutic approach. Second, we gathered their functional status by using standard assessment tools, including the manual function test (MFT), Berg Balance scale (BBS), and modified Barthel index (MBI). Third, we conducted face-to-face interviews with patients with hemiparetic stroke to identify their awareness and satisfaction with goal setting.

Functional status assessments

This study assessed the participants' functional status to determine if this was affected by their experiences in goal setting. The MFT was used to evaluate proximal arm move-

Table 2. Clinical characteristics of the participants   (N=81)

Characteristic	Number (%)	Minimum-Maximum	Mean (SD)
Sex			
Male	46 (56.8)		
Female	35 (43.2)		
Dominant side			
Right	69 (85.2)		
Left	12 (14.8)		
Paretic side			
Right	39 (48.1)		
Left	42 (51.9)		
Etiology			
Infarction	48 (59.3)		
Hemorrhage	33 (40.7)		
Age (y)		20-80	58.93 (13.62)
Post-stroke duration (mo)		1-62	15.77 (12.84)
MFT (affected side)		17-32	29.28 (2.49)
MMSE-K		13-30	25.62 (4.30)
MBI		12-100	66.06 (21.20)

MFT: manual function test, MMSE-K: Mini-Mental State Examination-Korea, MBI: modified Barthel index.

Table 1. The main questions of face-to-face interview from the question guide

Topic	Question	Score
Awareness	1. Do you know what your therapeutic goal? 2. What are you targeting goal?	1 (unawareness) to 2 (awareness)
Satisfaction	1. Are you satisfied with your therapeutic goals? 2. How satisfied are you with your therapeutic goals?	1 (satisfaction) to 2 (dissatisfaction)

ments and gross and fine dexterity of patients with hemiparetic stroke. The time needed to complete this test was approximately 10 minutes, and it can be administered easily. The test items were as follows: arm movement (4 items), grasp and pinch (2 items), and manipulation (2 items). The MFT was employed as an evaluation tool prior to the interview. The paretic side was assessed after the evaluation of the non-paretic side. The details of the assessment procedures were fully explained to the participants. In this study, MFT was used to assess the upper extremity function in participants [13].

The BBS a 14-item objective test, is used to determine the static and dynamic balance abilities of adults. Scores for each item range from 0 to 4. The scores depend on the participant's ability to perform the assessed activity. The item score is summed, and the maximum score is 56 [14]. The BBS has strong reliability and validity and is easy to use in the clinical setting [15]. In this study, BBS was used to assess the lower extremity function and balance ability in participants.

The MBI, a 10-item tool that is simple to administer, is used to assess patients' self-care and mobility abilities. It takes approximately 5 or 10 minutes to complete this observational test. The maximum score for this study is 100. High scores indicate a greater likelihood of being able to live at home independently after hospital discharge. Low scores on individual items highlight areas of difficulty. The tool has excellent reliability, validity, and overall utility [16,17].

Face-to-face interviews

Data was obtained through individual semi-structured face-to-face interviews, which were held in rehabilitation centers. Contact information was communicated to the first author. The first author conducted all of the interviews and was present the whole duration of each interview, which lasted for 30 minutes. Interview questions were simplified to facilitate better understanding and gain response from the participants. An interview protocol that was consisted of questions were utilized for the purpose of guiding the interviewer. The main questions asked in the survey are presented in Table 1. During the semi-structured face-to-face interviews, the first author provided the scores on the interview sheets.

Data analysis

This research utilized frequency analysis and descriptive statistics to analyze the general characteristics of the participants. To determine the relationship between functional status and awareness and satisfaction of therapeutic goals, a paired t-test was used. The statistic program used was PASW Statistics ver. 18.0 (IBM Co., Armonk, NY, USA), and the statistical significant standard was set to $\alpha = 0.05$

Results

The MBI, BBS, and MFT scores were significantly higher in the participants who were aware of the therapeutic goals than in those who were unaware ($p<0.001$; Table 3). When comparing the two groups in terms of their satisfaction and dissatisfaction with the goals, the MBI, BBS, and MFT scores were not significantly different ($p>0.05$). However, the MBI, BBS, and MFT scores were higher in the

Table 3. Relationship between awareness and physical function   (N=81)

Dependent variable	Unawareness (n=27)	Awareness (n=54)	t (p)
Modified Barthel index	58.11 (22.26)	70.04 (19.67)	−2.461 (0.016)
Berg Balance scale	21.37 (17.39)	36.80 (17.44)	−3.754 (<0.001)
Manual functional test	9.96 (9.49)	15.09 (9.32)	−2.319 (0.023)

Values are presented as mean (SD).

Table 4. Relationship between satisfaction and physical function   (N=81)

Dependent variable	Dissatisfaction (n=36)	Satisfaction (n=45)	t (p)
Modified Barthel index	64.89 (24.34)	67.00 (18.54)	−0.430 (0.669)
Berg Balance scale	28.11 (19.60)	34.49 (17.85)	−1.529 (0.130)
Manual functional test	12.36 (9.70)	14.20 (9.58)	−0.852 (0.397)

Values are presented as mean (SD).

participants who were satisfied with the therapeutic goals than in those who were unsatisfied (Table 4).

Discussion

The purpose of the present study was to investigate the effect of awareness and satisfaction in therapeutic goal setting on the functional status of patients with hemiparetic stroke. The main findings of this study were as following: first, the more aware participants were, the more independent daily activities they had; second, the participants who were aware of therapeutic goals were good balance ability compared with those who were unaware of the goals; third, the participants who were aware of therapeutic goals were good upper extremity function compared with those who were unaware of the goals; and finally, the group of satisfaction of the therapeutic goals was higher independent daily activities, balance ability, and upper extremity function than in those who were unsatisfied, but not significant.

Therapeutic goal setting is four essential elements: individual, behavior/activity, condition, and time. Goal setting is focused on the patient, and includes patient who receive direct care rehabilitation services and patient who benefit from consultation and advice, or services focused on promoting, health, wellness, and fitness [18]. Rehabilitation settings need to identify patient's individual therapeutic goals to deliver patient-centered therapeutic approaches [19]. Goal-oriented approach to making health care decisions has several advantages, such as focusing the individual, simplified decision-making process, control of the treatment option at patient's own, and monitoring rehabilitation progress [20]. Therapeutic goal setting is practically useful in client rehabilitation and is the espoused standard practice for many rehabilitation professionals [21]. According to previous studies, active client participation in goal setting is associated with better rehabilitation [9,22]. This study also confirmed that the patients with hemiparetic stroke who were aware of their therapeutic goals had a high functional status, including upper extremity function, balance ability and overall independence in performing daily activities.

Previous studies have been reported that patients are hardly involved in goals setting and patients are not fully aware of the active role they could play in the goal-setting process [23-25]. They also have been reported that therapists find shared goal setting difficult, due to time constraints, limited skills and the fact that they are not used to involving patients in treatment [23,24].

Another study suggested that to facilitate active client participation in neurorehabilitation, clients' preference must be recognized, professionals should anticipate patients' needs [26]. The results of this study reported that functional status, including independent daily living, balance ability, and upper extremity function, showed higher for the score in the group of awareness with therapeutic goal compared to the group of unawareness with the goal in hemiparetic stroke. This study examined the effects of satisfaction of therapeutic goal-setting on independent daily living, balance ability, and upper extremity function for hemiparetic stroke. The results of this study reported the satisfaction of goal-setting was not positive effects on independent daily living, postural stability, and upper extremity function, although the functional status scores were higher in the group that was satisfied with the goal-setting compared to the group that was dissatisfied with the goal-setting.

A possible limitation of this study is the use of a self-report measure to assess the participants' awareness and satisfaction, which could have led to bias. However, given that this questionnaire measures the objective dimension of client participation, this was not expected to produce different answers. Another limitation was that there was a small sample size although this study did aim to include a wide range of participants with varying age, post-onset time, and degree of hemiparesis. Hence, it would be difficult to generalize the results. Therefore, this study suggests that the awareness in therapeutic goal-setting would affect the improvement of functional status of hemiparetic stroke. This study highlights how persons with hemiparetic stroke affected client experience in goal setting.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

References

1. World Health Organization. The world health report 2003: shaping the future. Geneva: World Health Organization; 2003.
2. Desrosiers J, Demers L, Robichaud L, Vincent C, Belleville S, Ska B; BRAD Group. Short-term changes in and predictors of participation of older adults after stroke following acute care or rehabilitation. Neurorehabil Neural Repair 2008;22:288-97.
3. Hartman-Maeir A, Soroker N, Ring H, Avni N, Katz N.

Activities, participation and satisfaction one-year post stroke. Disabil Rehabil 2007;29:559-66.

4. Hildebrand M, Brewer M, Wolf T. The impact of mild stroke on participation in physical fitness activities. Stroke Res Treat 2012;2012:548682.

5. Amini DA, Kannenberg K, Bodison S, Chang P, Colaianni D, Goodrich B, et al. Occupational therapy practice framework: domain & process 3rd edition. Am J Occup Ther 2014;68:S1-48.

6. Sumsion T, Law M. A review of evidence on the conceptual elements informing client-centred practice. Can J Occup Ther 2006; 73:153-62.

7. Townsend EA, Polatajko HJ. Enabling occupation II: advancing an occupational therapy vision for health, well-being, and justice through occupation. Ottawa, ON: CAOT Publications ACE; 2007.

8. Holliday RC, Cano S, Freeman JA, Playford ED. Should patients participate in clinical decision making? An optimised balance block design controlled study of goal setting in a rehabilitation unit. J Neurol Neurosurg Psychiatry 2007;78:576-80.

9. Rosewilliam S, Roskell CA, Pandyan AD. A systematic review and synthesis of the quantitative and qualitative evidence behind patient-centred goal setting in stroke rehabilitation. Clin Rehabil 2011;25:501-14.

10. Doig E, Fleming J, Kuipers P, Cornwell P, Khan A. Goal-directed outpatient rehabilitation following TBI: a pilot study of programme effectiveness and comparison of outcomes in home and day hospital settings. Brain Inj 2011;25:1114-25.

11. Gauggel S, Hoop M, Werner K. Assigned versus self-set goals and their impact on the performance of brain-damaged patients. J Clin Exp Neuropsychol 2002;24:1070-80.

12. Eriksson G, Aasnes M, Tistad M, Guidetti S, von Koch L. Occupational gaps in everyday life one year after stroke and the association with life satisfaction and impact of stroke. Top Stroke Rehabil 2012;19:244-55.

13. Michimata A, Kondo T, Suzukamo Y, Chiba M, Izumi S. The manual function test: norms for 20- to 90-year-olds and effects of age, gender, and hand dominance on dexterity. Tohoku J Exp Med 2008;214:257-67.

14. Berg K, Wood-Dauphine S, Williams JI, Gayton D. Measuring balance in the elderly: preliminary development of an instrument. Physiother Can 1989;41:304-11.

15. Blum L, Korner-Bitensky N. Usefulness of the Berg Balance scale in stroke rehabilitation: a systematic review. Phys Ther 2008;88:559-66.

16. Fricke J, Unsworth CA. Inter-rater reliability of the original and modified Barthel Index, and a comparison with the Functional Independence Measure. Aust Occup Ther J 1997;44:22-9.

17. Rollnik JD. The early rehabilitation Barthel index (ERBI). Rehabilitation (Stuttg) 2011;50:408-11.

18. O'Sullivan SB, Schmitz TJ, Fulk GD. Physical rehabilitation. Philadelphia: FA Davis Co.; 2014.

19. Stevens A, Köke A, van der Weijden T, Beurskens A. The development of a patient-specific method for physiotherapy goal setting: a user-centered design. Disabil Rehabil 2017. doi: 10.1080/09638288.2017.1325943. [Epub ahead of print]

20. Reuben DB, Tinetti ME. Goal-oriented patient care--an alternative health outcomes paradigm. N Engl J Med 2012;366: 777-9.

21. Verma S, Paterson M, Medves J. Core competencies for health care professionals: what medicine, nursing, occupational therapy, and physiotherapy share. J Allied Health 2006;35:109-15.

22. Hunt AW, Le Dorze G, Trentham B, Polatajko HJ, Dawson DR. Elucidating a goal-setting continuum in brain injury rehabilitation. Qual Health Res 2015;25:1044-55.

23. Baker SM, Marshak HH, Rice GT, Zimmerman GJ. Patient participation in physical therapy goal setting. Phys Ther 2001;81: 1118-26.

24. Leach E, Cornwell P, Fleming J, Haines T. Patient centered goal-setting in a subacute rehabilitation setting. Disabil Rehabil 2010;32:159-72.

25. Levack WM, Dean SG, Siegert RJ, McPherson KM. Purposes and mechanisms of goal planning in rehabilitation: the need for a critical distinction. Disabil Rehabil 2006;28:741-9.

26. Barnard RA, Cruice MN, Playford ED. Strategies used in the pursuit of achievability during goal setting in rehabilitation. Qual Health Res 2010;20:239-50.