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ORIGINAL ARTICLE

Self-efficacy and Physical Function in Cancer Survivors Receiving Home-visit Rehabilitation

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Objectives: Home-visit rehabilitation is critical for cancer patients because it facilitates recovery. However, few studies have reported relevant information and practices concerning this patient support. This study investigated the factors influencing the self-efficacy of cancer survivors receiving home-visit rehabilitation compared with non-cancer home-visit rehabilitation users by matching propensity scores. **Methods:** The present study was a cross-sectional study involving participants from two cancer care institutions. Fifteen cancer survivors who received home-visit rehabilitation (9 men, 6 women; age=77.6±11.1 years) were matched for their propensity scores (adjusted for age, sex, and comorbidity) with 15 home-visit rehabilitation users without cancer (8 men, 7 women; age=74.7±11.7 years). Self-efficacy was measured based on the self-efficacy for activities of daily living (SEADL) scale and self-efficacy for going out among community-dwelling elderly people (SEGE) scale. Grip strength (GS), 30-second chair stand test (CS-30), Functional Independence Measure (FIM), and Life-Space Assessment (LSA) were measured based on objective evaluation items. **Results:** In cancer survivors, the SEADL was significantly correlated with GS, CS-30, FIM, motor-FIM (mFIM), and LSA. The CS-30 of cancer survivors was significantly correlated with SEGE. Among home-visit rehabilitation users without cancer, although the correlation between SEADL and FIM or mFIM was significant, SEGE was not significantly correlated with the other measurements. **Conclusions:** When compared with home-visit rehabilitation users without cancer, self-efficacy among cancer survivors was influenced not only by activities of daily living but also by physical function and life-space mobility.

Key Words: home medical care; life-space mobility; muscle strength; activities of daily living

INTRODUCTION

Cancer is a debilitating disease that not only impacts the health and normal functioning of patients but also has major implications for post-recovery and rehabilitation. Comprehensive home medical care (including home-visit rehabilitation) by interprofessional work for cancer patients is an important tool that assists them in improving their quality of life.[1)] McCorkle et al. reported that comprehensive home medical care for patients with advanced lung cancer was found to prevent stress and helped maintain independence in activities of daily living.[2)] Cancer patients receiving home medical care in Japan are also required to undergo home-visit rehabilitation in addition to cancer diagnosis and treatment.[3)] However, home-visit rehabilitation is underutilized among cancer patients throughout the world. Some estimates suggest that less than 10% of patients with cancer-related impairments receive home-visit rehabilitation.[4)] In addition, a 2001 review on this topic suggested the need and potential benefits of home-visit rehabilitation for cancer patients.[5)] However, despite widespread attention and endorsement by healthcare agencies and specialists, limited research is available on comprehensive home medical care for cancer patients—especially home-visit rehabilitation.

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A growing body of research recognizes that the prerequisite for improving the quality of life of cancer patients is to improve patients' self-efficacy.[6–8] Self-efficacy is defined as one's self-confidence in achieving behavioral goals. It takes precedence in Bandura's social cognitive theory, which is commonly known as the self-efficacy theory, and studies confirm its critical role in coping with the aftereffects of cancer or its treatment.[9] Bandura's self-efficacy theory identifies four sources of self-efficacy: performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal.[10] Targeted interventions for physical function, including gait ability, provide support for self-efficacy through the use of performance accomplishment as the source of self-efficacy information; such interventions have reported positive effects among cancer patients and their caregivers.[11] Furthermore, age, sex, duration of cancer diagnosis/treatment, and cancer-related symptoms (e.g., fatigue) were reported as factors influencing the self-efficacy of cancer patients.[12,13] However, these findings, which are based on independently living cancer patients, are not always generalizable to patients with higher dependencies and who require daily living assistance. To improve the self-efficacy of cancer survivors receiving home-visit rehabilitation, it is necessary to investigate anew the relationship between physical function and self-efficacy using evaluation items related to activities of daily living.

We compared the self-efficacy for activities of daily living or going out, physical function, ability of activities of daily living, and life-space mobility between cancer survivors and patients without cancer receiving home-visit rehabilitation who were matched for propensity scores (age, sex, and comorbidity). We thus investigated the factors affecting the self-efficacy of the two groups.

MATERIALS AND METHODS

Participants

The study protocol was approved by the Research Ethics Board of the International University of Health and Welfare (Otawara-shi, Tochigi, Japan; Registration: 19-Io-237) and was conducted in accordance with the ethical standards and the principles of the Declaration of Helsinki. All participants provided written and verbal informed consent. The study included all participants who received healthcare services between August 1, 2020, and July 31, 2021, from a home-visit nursing center in two regions of Japan. The home-visit rehabilitation program for all participants centered on activities of daily living and exercise for avoiding dysfunction (e.g., muscle weakness) and was supervised by a physical therapist or occupational therapist. The study used the following exclusion criteria: inpatients undergoing treatment at a medical institution, cessation of home-visit rehabilitation because of reasons such as death during the study period, or a decision from a physical therapist or occupational therapist that this study would be difficult for the participant because of the participant's medical condition (e.g., participants with mental or cognitive disorders). The following clinical data were collected: periods during which home-visit rehabilitation was received, frequency of home-visit rehabilitation, frequency of daycare facilities for adults, cancer diagnosis, and cancer treatment.

Cancer survivors were defined as participants with a history of diagnosis and treatment for cancer based on medical records. Home-visit rehabilitation users without cancer were matched for propensity score 1:1[14] accounting for age, sex, and a history of comorbidities (cerebrovascular diseases, orthopedic diseases, cardiac diseases, respiratory diseases, and intractable diseases).[12,15–17] The propensity score matching was performed using SPSS Statistics (version 27.0; IBM, Armonk, NY, USA).

Study Design

The present study is a cross-sectional study made up of participants belonging to two home-visit nursing centers in Japan. Self-efficacy and other measurements (muscle strength, lower-extremity function, independence in activities of daily living, and life-space mobility) were evaluated by a physical therapist or an occupational therapist. The demographic data, history of diagnosis and treatment for cancer, and comorbidities were recorded. All participants were managed by doctors engaged in home medical care.

Evaluation of Self-efficacy

In this study, self-efficacy for activities of daily living (SEADL) was measured as the degree of confidence in basic activities of daily living in participants.[16] The SEADL assessment consisted of six items: bathing, walking around the house, responding to the phone immediately, dressing and undressing, a simple cleaning task, and visiting a neighborhood store for groceries. For each of the six items in the SEADL, participant confidence was evaluated on four levels: 1 (no confidence), 2 (low confidence), 3 (medium confidence), and 4 (high confidence). The total SEADL score ranged from 6 (lowest level of confidence) to 24 (highest level of confidence). Factor analysis confirmed the construct and criterion-related validities of the SEADL, as shown by

the high reliability coefficient (α = 0.86); furthermore, significant correlations were confirmed between the objective ability of activities of daily living (e.g., gait in community-dwelling elderly).[16]

Self-efficacy for going out among community-dwelling elderly (SEGE) was calculated as the participant's level of confidence in going out.[17] The SEGE assessment included six items: I can willingly go out even if my family and friends stop me; I can go out even when I am reluctant; I can go out even if I pass through unpaved areas (including slippery places); I can go out for no particular reason; I can go out for work or caring for people; and I can handle going out even if I am feeling sick. For each of the six items in SEGE, participant confidence was evaluated on four levels: 1 (no confidence), 2 (low confidence), 3 (medium confidence), and 4 (high confidence). The total SEGE score ranged from 6 (lowest level of confidence) to 24 (highest level of confidence). Factor analysis confirmed the construct and criterion-related validities of SEGE, as shown by the significant correlations between the indicators comprising equivalent concepts (i.e., the health self-assessment and quality of life) and the self-efficacy scale for movements associated with community-dwelling elderly who are housebound.[17]

Evaluation of Other Measurements

This study also measured muscle strength, lower-limb muscle strength, ability for activities of daily living, and life-space mobility of each participant. Muscle strength was evaluated using grip strength (GS). The GS was measured in kilograms for the dominant hand of the participant using a Smedley-type handheld dynamometer (GRIP-D; Takei, Niigata, Japan). It was evaluated via two trials on each hand, and the sum of the maximum values on the left and right hands was used as the measured value. Lower-limb muscle strength was evaluated using the 30-second chair stand test (CS-30). CS-30 was measured as the number of repetitions (getting in and out of a chair) that a participant could complete in 30 seconds.[18] In the CS-30, a wide variety of skill levels were observed, with scores ranging from 0 for those who could not complete a repetition to more than 15 repetitions for fitter participants. This test was evaluated as the maximum value from two measures. The ability for activities of daily living was evaluated using the Functional Independence Measure (FIM). The FIM included 18 items measuring physical, psychological, and social function with scores ranging from 1 to 7 assessing the participant's level of disability in receiving home medical care. The total scores ranged from 18 (lowest level of function) to 126 (highest level of function). The total scores were divided into the motor-FIM (mFIM) scores (scores ranged from 13 to 91) and the cognitive-FIM (cFIM) scores (scores ranged from 5 to 35).[19] Life-space mobility was evaluated using the Life-Space Assessment (LSA). The LSA was measured for six levels of life-space, ranging from the participant's bedroom (life-space=0) to places beyond the participant's hometown (life-space=5).[20] For each of these six levels, participants were asked how often they had been to that specific life-space area during the past 4 weeks, and whether they did so independently or needed assistance from another person (e.g., family or caregiver) or equipment. The total LSA score was obtained by multiplying the life-space level reached (1–5) with the value for the frequency of transportation (1–4) for each life-space level, and the value for independence (1, 1.5, or 2). The total LSA score ranged from 0 (totally confined to bed) to 120 (independent, with daily out-of-town mobility).

Statistical Analysis

The Mann–Whitney U test was used to compare demographics, clinical characteristics, self-efficacy, and other measurements between home-visit rehabilitation users with cancer and those without cancer. Categorical variables were compared using the chi-square test. For each group, SEADL and SEGE were analyzed based on their relationship with other measurements using Spearman's rank-order correlation coefficient. All statistical analyses were performed using SPSS Statistics (version 27.0). Statistical significance was set at $P<0.05$.

RESULTS

A total of 458 home-visit rehabilitation users were approached for this study; 77 of them declined to participate and 259 were excluded (196 according to exclusion criteria, 63 because of incomplete data) from the study. Ultimately, a total of 122 home-visit rehabilitation users were enrolled in the study. These users were divided into two groups (21 cancer survivors, 101 non-cancer patients using home-visit rehabilitation) and matched using propensity scores (age, sex, and history of comorbidities). Of the 21 cancer survivors, 15 were matched 1:1 with home-visit rehabilitation users without cancer (**Fig. 1**). **Table 1** shows the participant demographics and clinical characteristics of the two groups. Cancer survivors and patients without cancer were found to be well matched in terms of age, sex, and history of comorbidities. The propensity score c-statistic in this study was 0.700.

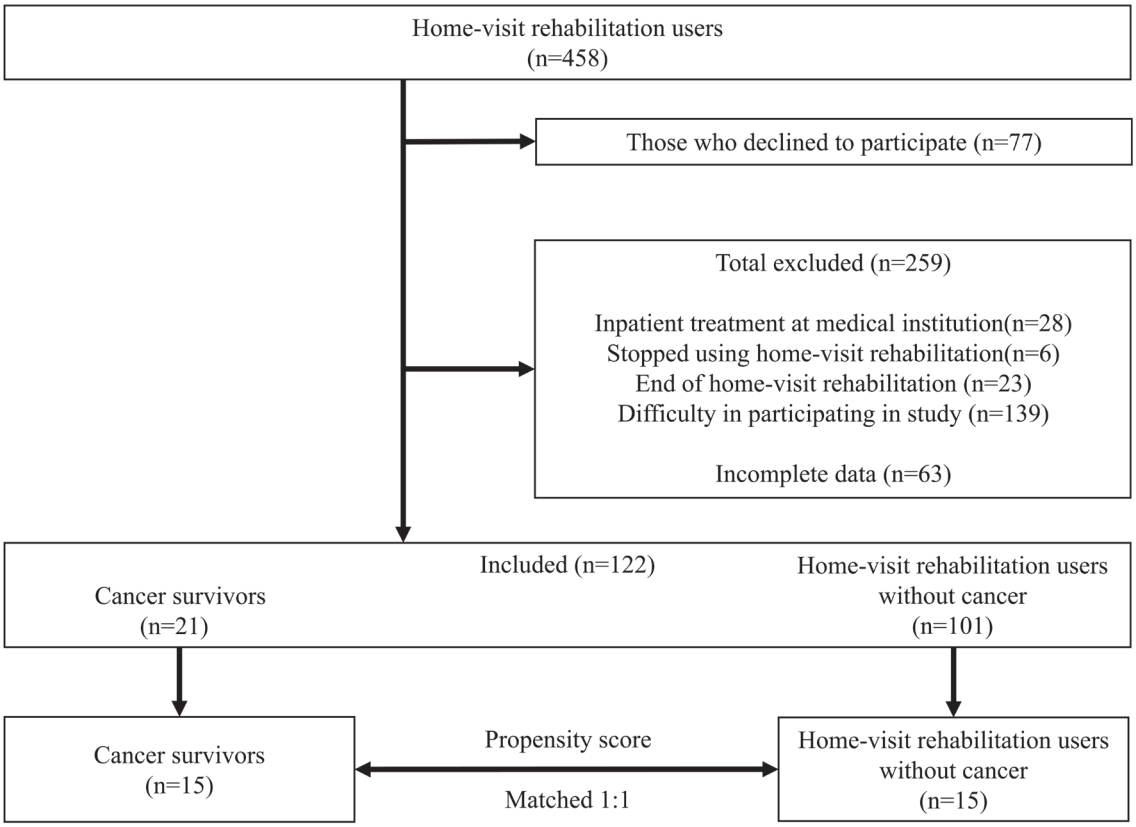

Fig. 1. Flow chart showing inclusion and exclusion of study participants.

Self-efficacy and Other Measurements in Home-visit Rehabilitation Users

Table 2 shows self-efficacy and other measurements of cancer survivors and patients without cancer using home-visit rehabilitation. The cFIM scores of cancer survivors were significantly lower than those of home-visit rehabilitation users without cancer. None of the other parameters was found to be significantly different between the groups.

Table 3 shows the correlations between self-efficacy and other measurements for each group. In cancer survivors, SEADL was significantly correlated with GS, CS-30, FIM, mFIM, and LSA (**Fig. 2**). CS-30 showed the highest correlation coefficient with SEADL (0.787), followed by mFIM (0.772). In addition, CS-30 was significantly correlated with SEGE in cancer survivors. However, in home-visit rehabilitation users without cancer, SEADL correlated significantly with FIM and mFIM, but SEGE was not significantly correlated with other measurements.

DISCUSSION

The results of this study show that SEADL in cancer survivors receiving home-visit rehabilitation was significantly and positively correlated with GS, CS-30, FIM, mFIM, and LSA (**Fig. 2** and **Table 3**). In cancer survivors, SEGE was significantly and positively correlated with CS-30 (**Table 3**). In home-visit rehabilitation users without cancer, SEADL was significantly and positively correlated with FIM and mFIM (**Table 3**), whereas SEGE showed no significant correlation with other measurements (**Table 3**). Hence, it can be inferred that the self-efficacy of cancer survivors is influenced not only by activities of daily living but also by physical function and life-space mobility.

Bandura's theory of self-efficacy is the evaluation of one's confidence in the performance of actions and is influenced by individual cognitive processes when actions or activities occur in a certain environment. Furthermore, self-efficacy is also considered a factor that determines behavior.[21] The objective ability of cancer survivors to perform physical activity may reflect their self-efficacy, as suggested in a previous study.[7] In our study, we found that SEADL was

Table 1. Demographics and clinical characteristics of participating home-visit rehabilitation users (n=30)

	Cancer survivors	Home-visit rehabilitation users without cancer	
	n=15	n=15	P value
Age (years)	77.6±11.1	74.7±11.7	0.367
Sex			
Female	6	7	1.000
Male	9	8	
Comorbidities			
Cerebrovascular diseases	6	4	0.700
Orthopedic diseases	8	9	1.000
Cardiac diseases	5	5	1.000
Respiratory diseases	2	1	1.000
Intractable diseases	2	3	1.000
Period during which home-visit rehabilitation was received (months)	34.9±50.1	39.1±37.8	0.345
Frequency of home-visit rehabilitation (times/week)	1.3±0.5	1.4±0.6	0.486
Frequency of daycare facility for adults (times/week)	0.6±0.9	0.8±0.9	0.512
Presence of caregiver			
Spouse	9	5	0.272
Child	4	7	0.450
Parents	1	0	1.000
Brother	0	1	1.000
Niece	0	1	1.000
Others	1	1	1.000
Cancer diagnosis [a]			
Thyroid cancer	1	-	
Breast cancer	1	-	
Lung cancer	2	-	
Gastric cancer	3	-	
Colon cancer	1	-	
Bladder cancer	2	-	
Prostate cancer	1	-	
Uterine cancer	2	-	
Ovarian cancer	1	-	
Leukemia	3	-	
Duration since cancer diagnosis (months)	84.5±99.2	-	
Cancer treatment [a]			
Surgery	11	-	
Chemotherapy	7	-	
Others	1	-	
Primary disease of home-visit rehabilitation users without cancer			
Cerebral hemorrhage	-	1	
Subarachnoid hemorrhage	-	1	
Symptomatic epilepsy	-	1	
Parkinson's disease	-	1	
Charcot–Marie–Tooth disease	-	1	
Dementia with Lewy bodies	-	1	
Lumbar spinal canal stenosis	-	2	
Ossification of posterior longitudinal ligament	-	1	
Spinal cord herniation	-	1	
Knee osteoarthritis	-	1	
Calcaneal fracture	-	1	
Osteonecrosis of the femoral head	-	1	
Pyogenic arthritis of knee	-	1	
Chronic kidney disease	-	1	

Data given as number or mean ± standard deviation.
[a] Includes duplicate cases.

Table 2. Self-efficacy and other measurements of participating home-visit rehabilitation users

		Cancer survivors	Home-visit rehabilitation users without cancer	P value
Self-efficacy	SEADL (points)	14.2±5.8	14.5±4.7	0.624
	SEGE (points)	9.9±5.3	7.9±4.9	0.486
Other measurements	GS (kg)	19.7±10.0	21.1±5.9	0.345
	CS-30 (repetitions)	6.4±6.1	4.5±5.9	0.389
	FIM (points)	104.6±21.0	107.2±13.1	0.935
	mFIM (points)	74.2±15.8	74.2±11.2	0.683
	cFIM (points)	30.4±6.4	33.0±4.8	0.045*
	LSA (points)	24.0±10.2	28.2±9.7	0.250

Data given as mean ± standard deviation.
* Significant difference by Mann–Whitney U test.

Table 3. Correlation between self-efficacy and other measurements for each group

	Cancer survivors		Home-visit rehabilitation users without cancer	
	SEADL	SEGE	SEADL	SEGE
GS	0.731*	0.478	−0.116	−0.354
CS-30	0.787*	0.679*	0.483	0.037
FIM	0.735*	0.383	0.645*	0.273
mFIM	0.772*	0.447	0.758*	0.388
cFIM	0.316	0.036	0.245	−0.171
LSA	0.582*	0.403	0.309	0.066

* Significant correlation for Spearman's rank correlation coefficient.

significantly correlated with FIM and mFIM in cancer survivors and in home-visit rehabilitation users without cancer. Therefore, in our study, for home-visit rehabilitation users with various diseases, their ability to perform activities of daily living may also reflect their self-efficacy. To increase the self-efficacy in performing activities of daily living in home-visit rehabilitation users, including cancer survivors, comprehensive rehabilitation, which includes the intervention of objective ability and self-efficacy of activities of daily living, may be necessary. Additionally, in cancer survivors, a decrease in self-efficacy was related to mental dysfunctions such as depression and anxiety, leading to a substantial decrease in quality of life.[22] In the future, investigations should consider individual factors, such as depression and anxiety, that may influence self-efficacy in cancer survivors.

In contrast, physical function, such as muscle strength and lower-limb muscle strength, and life-space mobility were significantly correlated with SEADL only in cancer survivors. The physical function of cancer survivors was significantly related to health-related quality of life, which reflects physical and mental subjective symptoms.[23] Although the mechanisms impacting the physical function and quality of life are still unclear, recent studies suggest that fatigue acts as a mediator between physical fitness or function and quality of life in cancer survivors.[23,24] Furthermore, physical fitness or function and quality of life have been perceived as effects of biological factors (e.g., increased pro-inflammatory cytokines)[25] or psychological factors (e.g., increased psychological distress).[26] Although these studies cannot be applied directly to the mechanisms associated with self-efficacy and physical function in cancer survivors, other factors, such as fatigue and biological or psychological factors, may be involved as mediators. LSA has been examined for its association with quality of life in palliative cancer survivors with relatively low activity.[27] In progressive diseases, including cancer, as the condition worsens, a decline in a person's well-being is predicted because of their inability to participate in usual activities or to accompany family and friends.[28] Based on the results of the present study, LSA is unlikely to replace GS or CS-30, which have relatively strong impacts on self-efficacy (**Fig. 2**, **Table 3**). However, LSA may be observed in another dimension of well-being and engagement with the community. Therefore, LSA may be an important factor in identifying the subtle changes in clinical status and/or

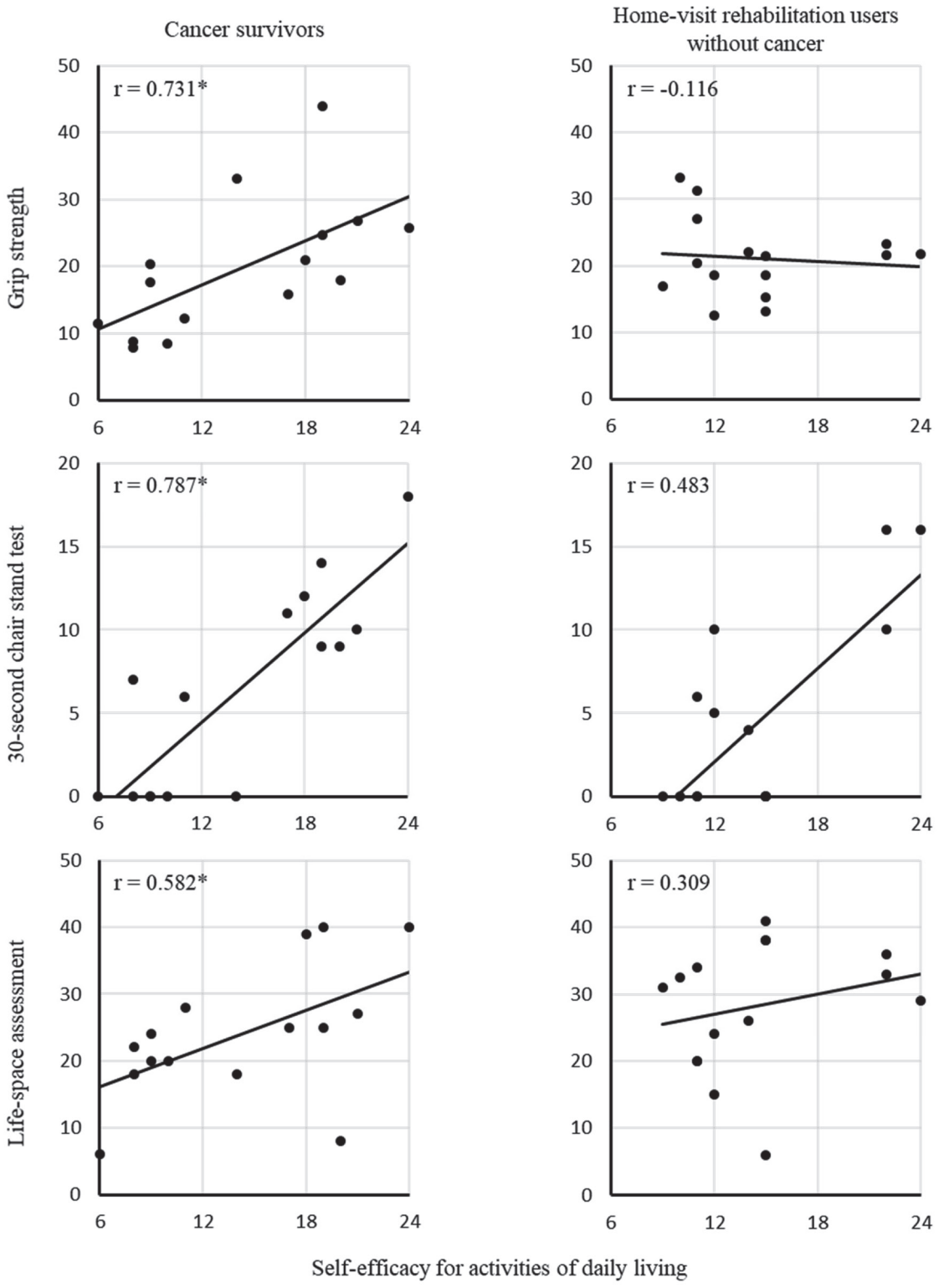

Fig. 2. Correlation plots of self-efficacy for activities of daily living of cancer survivors (left) and home-visit rehabilitation users without cancer (right) with grip strength (top), 30-second chair stand test (middle), and Life-Space Assessment (bottom). Asterisks indicate significant correlation for Spearman's rank correlation coefficient.

symptom control in cancer survivors. Hence, the evaluation of physical function and life-space in cancer survivors may be pertinent indicators of self-efficacy when compared with home-visit rehabilitation users without cancer.

One possibility is that comprehensive home-visit rehabilitation that is targeted to improve muscle strength, lower-limb muscle strength, and life-space mobility may also improve self-efficacy in activities of daily living in cancer survivors. However, as **Table 3** shows, SEGE of cancer survivors only showed significant correlation with lower-limb muscle strength. The factors relating to being housebound include not only individual constructs, such as advanced age and physical function, but also structural constructs, such as home entry and exit complications and use of social services.[29] Therefore, the influencing factors of self-efficacy related to the ability to go out may differ from the influencing factors of self-efficacy related to activities of daily living in cancer survivors; in future studies, we hope that the latter is more thoroughly investigated, especially by focusing on structural constructs.

As noted earlier, only FIM and mFIM showed significant correlations with SEADL for home-visit rehabilitation users without cancer. In this group of patients, cerebral, vascular, or orthopedic disease with motor paralysis associated with central or peripheral neuropathy was the primary disease (**Table 1**). Although the difference between the average values of cFIM for cancer survivors and rehabilitation users without cancer did not reach the minimal clinically important difference (cut-off value is 3 points),[30] the cFIM value was significantly higher in rehabilitation users without cancer (**Table 2**). Therefore, we predict better awareness of movement disorders in daily life among rehabilitation users without cancer. Accordingly, we find that, barring performance accomplishment, only three sources of self-efficacy (vicarious experience, verbal persuasion, and, especially, emotional arousal) may strongly affect self-efficacy in home-visit rehabilitation users without cancer.

Although the present study reveals important findings, it has some limitations. First, because the sample size for the study was small and the study was performed at two centers, the results cannot be generalized to include all cancer survivors receiving home-visit rehabilitation. We hope that our findings are confirmed through future studies using a larger number of patients from multiple institutions. Second, we must also consider the influence of selection bias (i.e., the cancer survivors were diagnosed long before the study's evaluation period began). This limitation necessitates a thorough investigation of other confounding factors (e.g., cancer survivors who were diagnosed closer to the date of evaluation) that affect the self-efficacy of cancer survivors. Third, we did not include cancer-related symptoms such as fatigue and depression that have been specified as influencing factors of self-efficacy in the literature. Such symptoms should be evaluated through objective parameters such as the Cancer Fatigue Scale and the Hospital Anxiety and Depression Scale.

CONCLUSION

The self-efficacy of users of home-visit rehabilitation was related to the objective ability to perform activities of daily living. In cancer survivors, a more comprehensive evaluation may be necessary because self-efficacy relates to muscle strength, lower-extremity function, and life-space mobility. Comprehensive intervention to improve physical function and life-space mobility through a home-visit rehabilitation program has immense potential to improve self-efficacy, and its positive effects, in cancer survivors.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Tralongo P, Ferrau F, Borsellino N, Verderame F, Caruso M, Giuffrida D, Butera A, Gebbia V: Cancer patient-centered home care: a new model for health care in oncology. Ther Clin Risk Manag 2011;7:387–392. DOI:10.2147/TCRM.S22119, PMID:21941445
2. McCorkle R, Benoliel JQ, Donaldson G, Georgiadou F, Moinpour C, Goodell B: A randomized clinical trial of home nursing care for lung cancer patients. Cancer 1989;64:1375–1382. DOI:10.1002/1097-0142(19890915)64:6<1375::AID-CNCR2820640634>3.0.CO;2-6, PMID:2670188

3. Hara T, Suzuki Y, Yoshimatsu T, Ohnuma T, Abe T, Shimada K: The actual condition survey focused on the activities of daily living independence in community-dwelling cancer survivor receiving home medical care [in Japanese]. Sogo Rehabil 2018;46:555–558. DOI:10.11477/mf.1552201339
4. Pergolotti M, Deal AM, Lavery J, Reeve BB, Muss HB: The prevalence of potentially modifiable functional deficits and the subsequent use of occupational and physical therapy by older adults with cancer. J Geriatr Oncol 2015;6:194–201. DOI:10.1016/j.jgo.2015.01.004, PMID:25614296
5. Gudas SA: Cancer rehabilitation in the home care setting. Home Care Provid 2001;6:172–176. DOI:10.1067/mhc.2001.119264, PMID:11581591
6. Chin CH, Tseng LM, Chao TC, Wang TJ, Wu SF, Liang SY: Self-care as a mediator between symptom-management self-efficacy and quality of life in women with breast cancer. PLoS One 2021;16:e0246430. DOI:10.1371/journal.pone.0246430, PMID:33539460
7. Chen HL, Liu K, You QS: Self-efficacy, cancer-related fatigue, and quality of life in patients with resected lung cancer. Eur J Cancer Care (Engl) 2018;27:e12934. DOI:10.1111/ecc.12934, PMID:30252973
8. Haas BK: Fatigue, self-efficacy, physical activity, and quality of life in women with breast cancer. Cancer Nurs 2011;34:322–334. DOI:10.1097/NCC.0b013e3181f9a300, PMID:21116178
9. Bandura A: Social cognitive theory: an agentic perspective. Annu Rev Psychol 2001;52:1–26. DOI:10.1146/annurev.psych.52.1.1, PMID:11148297
10. Bandura A: Self-efficacy: toward a unifying theory of behavioral change. Psychol Rev 1977;84:191–215. DOI:10.1037/0033-295X.84.2.191, PMID:847061
11. Gong J, Hu C, Chen M, Cao Q, Li Q: Interventions to improve self-efficacy in colorectal cancer patients and/or caregivers: a systematic review and meta-analysis. J Oncol 2021;2021:1–12. DOI:10.1155/2021/4553613, PMID:34707659
12. Al-Harithy FM, Wazqar DY: Factors associated with self-management practices and self-efficacy among adults with cancer under treatment in Saudi Arabia. J Clin Nurs 2021;30:3301–3313. DOI:10.1111/jocn.15843, PMID:33963631
13. Kurt S, Altan Sarikaya N: Correlation of self-efficacy and symptom control in cancer patients. Support Care Cancer 2022;30:5849–5857. DOI:10.1007/s00520-022-06972-0, PMID:35364732
14. Rosenbaum PR, Rubin DB: The central role of the propensity score in observational studies for causal effects. Biometrika 1983;70:41–55. DOI:10.1093/biomet/70.1.41
15. Kim WS, Shimada H, Sakano Y: The relationship between self-efficacy on health behavior and stress responses in chronic disease patients [in Japanese]. Jpn J Psychosom Med 1996;36:499–505. DOI:10.15064/jjpm.36.6_499
16. Suzuki M, Kanamori M, Yamada K, Suzuki K, Saito H, Kano K: A self-efficacy scale for Activities of Daily Living for the elderly living in their own homes: investigation of related factors of self-efficacy [in Japanese]. Kango Kenkyu 1999;32:119–128. DOI:10.11477/mf.1681900496
17. Yamazaki S, Imuta H, Hashimoto M, Nomura S, Yasumura S: Development of a self-efficacy scale for going out among community-dwelling elderly [in Japanese]. Jpn J Public Health 2010;57:439–447. PMID:20718201
18. Jones CJ, Rikli RE, Beam WC: A 30-s chair-stand test as a measure of lower body strength in community-residing older adults. Res Q Exerc Sport 1999;70:113–119. DOI:10.1080/02701367.1999.10608028, PMID:10380242
19. Keith RA, Granger CV, Hamilton BB, Sherwin FS: The Functional Independence Measure: a new tool for rehabilitation. Adv Clin Rehabil 1987;1:6–18. PMID:3503663
20. Baker PS, Bodner EV, Allman RM: Measuring life-space mobility in community-dwelling older adults. J Am Geriatr Soc 2003;51:1610–1614. DOI:10.1046/j.1532-5415.2003.51512.x, PMID:14687391
21. Bandura A: Self-efficacy mechanism in human agency. Am Psychol 1982;37:122–147. DOI:10.1037/0003-066X.37.2.122
22. Omran S, Mcmillan S: Symptom severity, anxiety, depression, self-efficacy and quality of life in patients with cancer. Asian Pac J Cancer Prev 2018;19:365–374. DOI:10.22034/APJCP.2018.19.2.365, PMID:29479979
23. Buffart LM, De Backer IC, Schep G, Vreugdenhil A, Brug J, Chinapaw MJ: Fatigue mediates the relationship between physical fitness and quality of life in cancer survivors. J Sci Med Sport 2013;16:99–104. DOI:10.1016/j.jsams.2012.05.014, PMID:22749527

24. Kalter J, Kampshoff CS, Chinapaw MJ, Van Mechelen W, Galindo-Garre F, Schep G, Verdonck-De Leeuw IM, Brug J, Buffart LM: Mediators of exercise effects on HRQoL in cancer survivors after chemotherapy. Med Sci Sports Exerc 2016;48:1859–1865. DOI:10.1249/MSS.0000000000000976, PMID:27128668
25. Schmidt ME, Semik J, Habermann N, Wiskemann J, Ulrich CM, Steindorf K: Cancer-related fatigue shows a stable association with diurnal cortisol dysregulation in breast cancer patients. Brain Behav Immun 2016;52:98–105. DOI:10.1016/j.bbi.2015.10.005, PMID:26456694
26. Paika V, Almyroudi A, Tomenson B, Creed F, Kampletsas EO, Siafaka V, Gkika S, Mavreas V, Pavlidis N, Hyphantis T: Personality variables are associated with colorectal cancer patients' quality of life independent of psychological distress and disease severity. Psychooncology 2010;19:273–282. DOI:10.1002/pon.1563, PMID:19353527
27. Phillips JL, Lam L, Luckett T, Agar M, Currow D: Is the Life Space Assessment applicable to a palliative care population? Its relationship to measures of performance and quality of life. J Pain Symptom Manage 2014;47:1121–1127. DOI:10.1016/j.jpainsymman.2013.06.017, PMID:24094702
28. Zalenski RJ, Raspa R: Maslow's hierarchy of needs: a framework for achieving human potential in hospice. J Palliat Med 2006;9:1120–1127. DOI:10.1089/jpm.2006.9.1120, PMID:17040150
29. Lee J, Suh Y, Kim Y: Multidimensional factors affecting homebound older adults: a systematic review. J Nurs Scholarsh 2022;54:169–175. DOI:10.1111/jnu.12724, PMID:34779108
30. Beninato M, Gill-Body KM, Salles S, Stark PC, Black-Schaffer RM, Stein J: Determination of the minimal clinically important difference in the FIM instrument in patients with stroke. Arch Phys Med Rehabil 2006;87:32–39. DOI:10.1016/j.apmr.2005.08.130, PMID:16401435