

# The Role of Physical Therapists in Living Environment Maintenance of the Home-bound Elderly Disabled

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**Abstract.** [Purpose] This study explored the roles of physical therapists (PTs) in living environment maintenance, which is essential for living securely and stably at home, and examines how physical therapists can fulfill these roles more efficiently and effectively. [Subjects and Methods] A questionnaire on living environment maintenance was given to PTs working at randomly selected hospitals, health care facilities for the elderly requiring long-term care, home-visit nursing stations, and other such facilities and directly providing physical therapy to the home-bound elderly disabled. The subjects of the study were 77 PTs who returned valid responses. [Results] For awareness of systems for living environment maintenance, PTs were more aware of the system based on the Long-Term Care (LTC) Insurance Act than the system based on the Act on Welfare for the Home-Bound Elderly Disabled. PTs who have worked at two or more types of medical, welfare, and intermediate institutions were more aware of such systems than PTs who have worked at only one type. For PTs handling living environment maintenance for the home-bound elderly disabled, approximately 80% of respondents answered that they have handled some living environment maintenance, and PTs with longer clinical experience have handled more living environment maintenance cases. [Conclusion] The results demonstrated that PTs understand their living environment maintenance work well and handle the work. The results, however, also suggested that educational and operational improvements are urgently required for PTs handling living environment maintenance essential for the lives of the home-bound elderly disabled.

**Key words:** Living environmental maintenance, Physical therapists, Home-bound elderly disabled

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## INTRODUCTION

According to 2012 demographic statistics issued by the National Institute of Population and Social Security Research, the population ratio of people 65 years old or over will increase from 24.2% in 2012 to 25.1 or 25.2% in 2013, accounting for over a quarter of Japan's entire population. The ratio will increase to 33.4% in 2035, more than one third of the entire population. The ratio is expected to be 39.9% in 2060, approximately 50 years from now, i.e., one in 2.5 persons will be an elderly person 65 years old or over<sup>1)</sup>. With this rapid population aging, the increase in elderly people requiring care and support is becoming a social problem.

Under such circumstances, the Long-Term Care (LTC) Insurance System started in April 2000. Under this system, the entire society provides support for nursing care for the elderly so that elderly people requiring nursing care can live with peace of mind in familiar communities. For elderly people with disabilities to rebuild their lives in their own

homes, living environment maintenance is essential. Thus, interest in living environment maintenance is increasing annually. For living environment maintenance, accurately understanding the physical condition of each home-bound elderly disabled person, assessing and judging if their physical condition will improve, remain the same, or deteriorate, and appropriately offering living environment maintenance services are essential. For these, PTs play important roles<sup>2)</sup>. Reports on PTs and living environment maintenance, however, are scarce<sup>2, 3)</sup>.

A questionnaire was sent to PTs, and the responses were analyzed to explore the current situation and problems concerning PTs and living environment maintenance and examine how they can fulfill their roles more efficiently and effectively.

## SUBJECTS AND METHODS

A questionnaire on living environment maintenance was given to PTs working at randomly selected hospitals, health care facilities for the elderly requiring long-term care, home-visit nursing stations, and other such facilities

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and directly providing physical therapy to the home-bound elderly disabled. The subjects of the study were 77 PTs who returned valid responses.

The questionnaire included their clinical experience duration as PTs, current workplace, places they have previously worked at as PTs (multiple answers allowed), awareness of systems for living environment maintenance, and whether and how they handle living environment maintenance.

For their clinical experience duration, the subjects were divided into two groups: one with less than ten years of clinical experience and the other with ten or more years.

For current and previous places of work, PTs were asked to select the most appropriate ones from the following categories: medical institutions (hospitals and clinics), intermediate institutions (health care facilities for the elderly requiring long-term care, home-visit nursing stations, day-care centers, and other such institutions), welfare institutions (welfare facilities for the elderly requiring long-term care, rehabilitation facilities for physically disabled persons, child welfare facilities, and other such institutions), educational and research institutions, government institutions, health care industry, and other.

For the above categories, the information and statistical data on the Japanese Physical Therapy Association website were used for reference. For the current workplace, the subjects were divided into three groups: PTs working at medical institutions, PTs working at intermediate institutions, and PTs working at other types of institutions. For the previous workplaces, the subjects were divided into two groups: PTs who have worked at only one type of institutions and PTs who have worked at two or more types.

For PT awareness of systems for living environment maintenance, i.e., the house modification allowance based on the Welfare Measures for the Elderly and home improvement based on the LTC Insurance Act, the subjects were divided into two groups: a high-awareness group that is well or very aware of such systems and a low-awareness group that is only slightly aware, is even less awareness, or is unaware.

The questionnaire asked about PT experience in living environment maintenance, as well as how the PTs followed up modification work for living environment maintenance. For PT experience in living environment maintenance, PTs were asked whether they have ever handled living environment maintenance, and if the answer was yes, they were also asked how many times they have. The subjects were divided into two groups: a rarely-handling group who had handled such roles less than ten times and an often-handling group who had handled such roles ten times or more.

For follow-up after modification work, the subjects were asked if they have followed up after modification work for living environment maintenance. If they answered yes, they were also asked when they did such follow-up, and to choose from immediately, within one week, within one month, within six months, or more than six months after the modification. For follow-up methods, the subjects selected from phone, questionnaire, visiting and other methods.

Concerning the ethics of this study, we explained to the PTs in writing that any information obtained from the ques-

tionnaire survey would only be used for this study and that no secrets obtained from the survey would be disclosed to any third parties.

The correlations between respondent attributes and their answers to two questions, one about their knowledge of social systems for living environment maintenance for the home-bound elderly disabled and the other about their roles in living environment maintenance and if and how they handle such roles, were examined using the  $\chi^2$  test. If the  $\chi^2$  test suggested that the answers did not differ depending on the basic respondent information, the answers were simply aggregated and the percentages calculated. For statistical analysis, we used Stat Soft's statistical analysis software, STATISTICA 2000 Pro. A significance level of 5% was considered statistically significant.

## RESULTS

The subjects consisted of 59 males (76%) and 19 females (24%). The average duration of clinical experience was  $12.0 \pm 6.4$  years (1–35 years); 38 subjects (49%) had less than ten years of experience, and 39 subjects (51%) had ten or more years of experience.

For the current workplace, 39 subjects (55%) were currently working at medical institutions, 29 subjects (41%) were currently working at intermediate institutions, and 3 subjects (4%) were currently working at other types of institutions. For the previous workplaces, over half of the subjects, 43 subjects (55%), had worked at two or more types of institutions. Thirty-five subjects (45%) had worked at only one type of institution, which was, in most cases, a medical institution.

For subject awareness of living environment maintenance systems, the high-awareness group for the system based on the Welfare Measures for the Elderly accounted for 27% of the subjects, whereas the high-awareness group for the system based on the LTC Insurance Act accounted for 53%. The subjects were more aware of the system based on the LTC Insurance Act than the system based on the Welfare Measures for the Elderly. The correlations between subject awareness of such systems and their attributes (gender, clinical experience duration, and current and previous workplaces) were analyzed using the  $\chi^2$  test, but no statistical correlations were observed. For the previous workplaces, subjects who had worked at two or more types of institutions were more aware of home improvement based on the LTC Insurance Act than those who had worked only at medical institutions ( $p < 0.05$ ) (Table 1).

Asked if they have ever handled some living environment maintenance for the home-bound elderly disabled, 60 subjects (78%) answered Yes and 17 subjects (22%) answered No. Among the 60 subjects who answered affirmatively, 30 subjects (53%) had handled less than ten cases of living environment maintenance, and 28 subjects (47%) had handled ten or more cases. Approximately half of them had handled ten or more cases. The correlations between the number of cases that the subjects handled and their attributes (gender, clinical experience duration, and current and previous workplaces) were analyzed using the  $\chi^2$  test. No correlations

**Table 1.** The correlations between awareness of systems for living environment maintenance in long-term care insurance and number of previous workplaces

	High-awareness group (%)	Low-awareness group (%)	
A	52.8	47.2	*
B	76.9	23.1	

\*:  $p < 0.05$ 

A: PTs who had worked at only one type of institution (n=36).

B: PTs who had worked at two or more types of institution (n=39).

were observed between whether the subjects handled less than ten cases or ten or more cases and their genders, and current and previous workplaces. With the clinical experience duration, however, a correlation was observed. The duration was longer for the group that handled more cases than the group that handled less cases, suggesting that PTs with longer clinical experience have handled more living environment maintenance cases ( $p < 0.05$ ) (Table 2).

For follow-up after modification work, 49 subjects (64%) performed some follow-up. Fifteen subjects (31%) performed such follow-up immediately after the modification, 18 subjects (37%) performed such follow-up within one week, 12 subjects (24%) performed such follow-up within one month, and 4 subjects (8%) performed such follow-up within six months. Over 90% of the PTs performed some follow-up within one month. For the follow-up method, 27 subjects (52%) followed up by visiting, 18 subjects (34%) followed up by questionnaire, 4 subjects (8%) followed up by phone, and 3 subjects (6%) followed up by other methods. More than half of them actually visited houses for the follow-up.

Asked whether they want to handle living environment maintenance as PTs in the future, over 90% of the subjects answered definitely or if opportunities arise. No statistical correlations, however, were observed between the number of cases that the subjects handled as PTs in living environment maintenance for the home-bound elderly disabled and their attributes.

## DISCUSSION

Japan is one of the world's fastest aging societies, and the increase in elderly disabled requiring long-term care is becoming a social problem. According to the 2012 Long-Term Care Insurance Report issued by the Ministry of Health, Labour and Welfare (MHLW), 5,419,000 people, including the bedridden elderly, now have a Certification of Long-Term Care Need<sup>4)</sup>, and the figure is expected to continue to increase. According to the 2010 MHLW Report of Basic Research on Japanese Life<sup>5)</sup>, cerebrovascular disorders are the most common cause for disabilities that require care, accounting for 24.1% of cases. Weakening due to aging (13.1%) and bone fractures due to falling (9.3%) followed. Therefore, in order to reduce the increasing number of people requiring long-term care and prevent the elderly from requiring care, preventing bone fractures due to falling is

**Table 2.** The correlations between clinical experience duration and number of living environment maintenance cases

Number of cases	Clinical experience duration	
	Less than ten years (%)	Ten or more years (%)
Less than ten times (n=30)	66.7	33.3
Ten times or more (n=30)	40	60

\*:  $p < 0.05$ 

important. Living environment maintenance must be promoted and implemented as much as possible. PTs providing services for the home-bound elderly disabled must understand the living environment, community, and related laws and systems.

Concerning the significance of PT knowledge of systems for living environment maintenance, Nagano<sup>6)</sup> noted that most PTs in Japan provide their services based on health care insurance, long-term care insurance, and other such systems, and a certain level of understanding of such systems is essential for PT clinical practice and providing PT skills to Japanese. From our study, the high-awareness group for the system based on the Welfare Measures for the Elderly accounted for 27% of the subjects, whereas the high-awareness group for the system based on the LTC Insurance Act accounted for 53%. PTs are well aware of the LTC Insurance Act, but their understanding of the Act on Welfare for the Elderly was limited. This may suggest that PT knowledge and awareness of the Welfare Measures for the Elderly for preventing specific and weakened elderly people from requiring care are less than their knowledge and awareness concerning the LTC insurance system. Since preventing the elderly from requiring care will be more and more encouraged in the future, PTs are required to understand and be aware of the Welfare Measures for the Elderly, as much as they do with regard to the LTC insurance system.

No statistical correlations were observed between PT awareness of systems for living environment maintenance and their gender, clinical experience duration, and current and previous workplaces. For previous workplaces, however, subjects who had worked at two or more types of institutions were more aware of home improvement based on the LTC Insurance Act than those who had worked only at medical institutions (hospitals and clinics). As Nagano<sup>6)</sup> noted, this suggests that working only at medical institutions is insufficient for PTs to better understand home improvement based on the LTC Insurance Act. Working at other types of institutions, such as intermediate institutions, is required. Government policy, however, reduces medical spending and encourages elderly people to be treated at home, discharging them from institutions as soon as possible. Nagano<sup>6)</sup> also noted that, under this policy, even PTs without clinical experience at intermediate institutions are required to have thorough and broad understanding and knowledge of the LTC insurance system and other administrative systems and measures, including health, medical, and welfare

systems and measures, for living environment maintenance. For this, training and education for administrative systems and measures must be improved in undergraduate programs for PTs in the future.

Concerning PT intervention in living environment maintenance, Hiruma<sup>3)</sup> reported that over 70% of PTs have intervened in living environment maintenance. Similar results were also observed in our study, where approximately 80% answered that they had handled some living environment maintenance. Therefore, as Hiruma<sup>3)</sup> noted, living environment maintenance is becoming a common way for PTs to support clients. For the correlation between the number of intervention cases and clinical experience duration, the duration was longer for the group with more cases than the group with less cases, demonstrating that PTs with longer clinical experience had handled more living environment maintenance cases.

Kanazawa<sup>7)</sup> noted that PTs should handle “monitoring and movement instruction” in living environment maintenance. After modification is completed, PTs should help clients to use the newly modified fixtures, and analyze and examine how client movement changed compared with before the modification was completed. According to our study, 64% of the subjects performed some follow-up after making a modification. Over 90% of the subjects performed some follow-up within one month, and more than half of them actually visited houses to perform follow-up, suggesting that many PTs visit houses soon after making a modification for follow-up and perform “monitoring and

movement instruction” as Kanazawa advises. Kamimura<sup>8)</sup>, however, noted that some clients stop using the modified fixtures or that re-modification becomes necessary a few months later. According to Kamimura<sup>8)</sup>, these are often affected by client age and physical condition at the time of the modification. Therefore, depending on the age and physical condition of the client, follow-up after a few months, in addition to early follow-up, is also recommended.

#### REFERENCES

- 1) National institute of population and social security research: Demographic material in 2012. <http://www.ipss.go.jp/syoushika/tohkei/newest04/con2h.html> (Accessed Dec. 18, 2012)
- 2) Wakabayashi T, Ishii T, Kuri M, et al.: Current state and problem in house repair. *Rigaku Ryoho Koto*, 2009, 29: 49–56.
- 3) Hiruma M: The role of physical therapists in house focusing on actual contributions made by physical therapists. *Rigakuryoho Kagaku*, 2011, 26: 763–767. [[CrossRef](#)]
- 4) Ministry of Health, Labour and Welfare: Nursing insurance business report. <http://www.mhlw.go.jp/topics/kaigo/osirase/jigyo/m11/1103.html> (Accessed Dec. 18, 2012)
- 5) Ministry of Health, General condition of national life base investigation in 2010 <http://www.mhlw.go.jp/toukei/saikin/hw/k-kyosa/k-kyosa10/4-3.html> (Accessed Dec. 18, 2012)
- 6) Nagano K: Transition of system. In: Physical therapy of community based rehabilitation. Hosoda K supervision. Tokyo: Nankodo Press, 2008, pp 11-40.
- 7) Kanazawa Y: Role of physical therapists in house adaptation to set-home care clients. *Phys Ther Jpn*, 2005, 32: 173–176.
- 8) Kamimura T: Follow-up survey of home renovation services provided under long-term care insurance. *Jpn J Rehabil Med*, 2005, 42: 714–720. [[CrossRef](#)]