

Evaluation by Residents after Home Modification for the Disabled in Japan

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Abstract

In Japan, there is a home modification program for the disabled that subsidizes the costs of modifying homes to make them accessible. The disabled can be the beneficiary of the system only once in their lifetimes. The purpose of this study is to evaluate residence in housing modified with the assistance of Japan's home modification program; problems with the home modification program, reasons for the need of re-modification, and satisfaction and dissatisfaction after home modification. Most of the disabled who had had their homes modified expressed satisfaction, saying that their lives had become more convenient after modification. However, some modified parts at their homes are still inconvenient to use because the modifications were carried out without much preparation. Furthermore, as disabilities deteriorate over time, the modified homes need to be updated accordingly. This means that many modified homes are in need of re-modification. The government, therefore, should introduce a program that helps them to modify their homes regardless of whether they previously received home modification assistance.

Keywords: *the disabled, home modification, home modification program*

1. Introduction

1.1. Background and Purpose of the Study

The International Classification of Impairments, Disabilities and Handicaps (ICIDH), published in 1980, defines disability as a functional limitation and activity restriction resulting from disease or injury. People with disabilities face social disadvantages (Figure 1).

Over time, the definition of disability has changed. Specifically, the endorsement of the International Classification of Functioning, Disability and Health (ICF) at the World Health Assembly of the World Health Organization in May 2001 expanded the definition of disability to include more types of impairments. The ICF conceptualizes disability as a multi-dimensional phenomenon resulting from the interaction of a person's health conditions, environmental factors, and personal factors (Figure 2). The environmental factors here refer to architectural and housing environments, which suggests that the housing environment has a significant effect on the lives of the disabled.

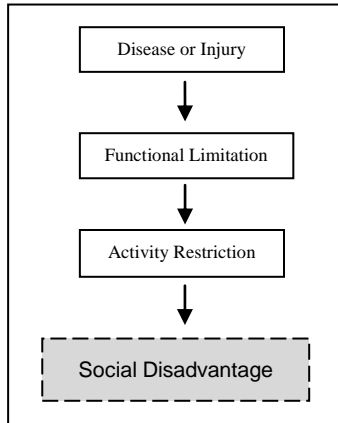


Figure 1. Structure of ICDH

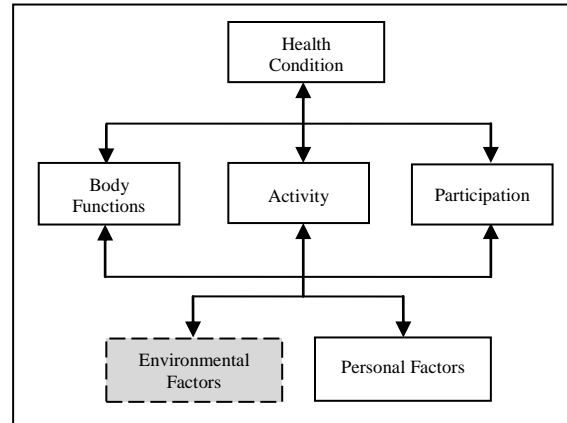


Figure 2. Structure of ICF

In recent years, welfare policy for the disabled has shifted its focus away from supporting care facilities to helping the disabled to continue living in their own homes. This shift has caused increased attention to a home modification program. Home modification makes it possible for people with disabilities in hospitals or care facilities to return home and lead relatively independent lives. Today, a growing number of people with disabilities in Japan are applying for the home modification.

The program, however, offers help only once. Therefore, when their modified homes are in need of re-modification, the disabled must bear the costs themselves. Due to financial constraints, some of the disabled choose to live with problematic initial modifications rather than pay for adjustments.

Therefore, the purpose of this study is to evaluate residence in housing modified with the assistance of Japan's home modification program; problems with the home modification program, reasons for the need of re-modification, and satisfaction and dissatisfaction after home modification.

1.2. Demographic Data of the Subjects in this Study

The disabled in this study consist of people with first-degree disabilities who have had their homes modified. Most of them were born with cerebral palsy (Table 1).

They were divided into two groups: one group living with their families and the other group living separately from their families. The subjects are mostly in their 20s and 30s, and include more manual wheelchair users (six out of nine subjects) than electric wheelchair users (three out of nine subjects). Furthermore, seven of the subjects go out during weekdays with the help of day care services.

1.3. Research Content

This study is about residential evaluation after home modification with the assistance of Japan's home modification program. For that, this study researches the following issues: reasons for disabled people to modify their homes (Table 2); the use of modified homes; problematic areas of modified homes; -the satisfying or unsatisfying features of modified homes; and the parts in need of re-modification. In addition, based on the results of the examination, reasons for the need of re-modification were- analyzed.

Table 1. Demographic Data of the Subjects in this Study

	Gender	Age	Height (cm)	Weight (kg)	Disability	Degree of disability	Cohabiting family members	Housing Type	Wheelchair Type	Services being used
A	Male	36	-	60	Cerebral palsy	First degree	Parents	Rental apartment	Manual	■ ▲
B	Female	24	135	48			Parents, Younger brother	Privately owned detached house		■ ▲
C		25	141	43			Parents, Older brother	Rental apartment	■ ●	
D		20	-	53			Mother, Younger sister		Electric	■ ●
E		52	150	48			None	Rented apartment	Manual	▲
F	Male	39	164	45	Muscular dystrophy	Privately owned apartment		▲		
G	Female	34	168	-	Cerebral palsy	Rented mansion		Electric	■ ▲ ★	
H		39	-	-		Rental apartment		Manual	■ ▲	
I		Male	38	-		-	Rented apartment	Electric	■ ▲	

■ Day care service ▲ Helper service ● Visiting bathing service ★ Visiting medical service

Table 2. Contents of the Examination of Modified Homes

1. Initiation of home modification	2. Current state of the use of modified homes
Time, reason, and main purpose of home modification	Modified parts being used now, modified parts not being used and reasons for not using them
3. Problems	4. Problematic factors
Inconvenient, unsatisfactory parts after modification, the time and reason the subject realized their inconvenience	The amount of knowledge and information of home modification, the preparation time, the way home modification companies and the disabled exchange their ideas
5. Re-modification	6. Satisfactory and unsatisfactory features
Whether the home was re-modified or not, the reason for re-modification, hope about re-modification of residents in the future	Degree of satisfaction or dissatisfaction with overall home modification, satisfactory and unsatisfactory modified parts, the degree of satisfaction or dissatisfaction with possible modification

1.4. Research Method

To begin with, questionnaires were sent out to and collected by post from disabled people who had had their homes modified. Then, individual interviews with the disabled were conducted at each of their homes as relates to the following information:

- First, satisfaction and dissatisfaction about home modification
- Second, reasons for satisfaction or dissatisfaction with modified homes
- Third, changes in daily life brought about by home modification
- Forth, precautions and advice for those planning to have their homes modified

The interviews were held one time for each case and lasted three to four hours. Where the disabled subjects were living separately from their families, researchers interviewed the subjects themselves. However, where they were living with their families, researchers interviewed their mothers who look after the subjects.

2. Description and Use of Modified Homes

2.1. Description of Modified Homes according to Living Conditions

In order to understand the current state of home modification for the disabled, this study examines the modified homes of nine disabled people—four disabled people living with families (cases A to D) and five living alone (cases E to I) as shown in Table 3.

Table 3. Description of Home Modification

Case	Description	Case	Description
Case A	Living room - Installed an X-Y ceiling lift Toilet room - Installed an X-Y ceiling lift, Replaced the door with a curtain Bedroom - Installed a fixed ceiling lift Entrance - Installed a mini-slope (to level the floor) Bathroom - Installed plastic flooring	Case B	From bedroom to bathroom - Installed a fixed L ceiling lift Toilet room - Removed the door Garage - Attached to the entrance for convenience on rainy days Vertical movement - Installed an elevator inside (from first to third floor)
Case C	Bedroom - Replaced the hinged door with a sliding door Leveled the floor Replaced door hinges with ones allowing 180 degree movement Toilet room - Replaced door hinges with ones allowing 180 degree movement Installed grab bars Vertical movement - Installed a stair lift	Case D	Bedroom - Installed an X-Y ceiling lift Toilet room and Bathroom - Installed an X-Y ceiling lift Kitchen and Living room - Installed a fixed ceiling lift Entrance - Installed a mini-slope (to level the floor)
Case E	Toilet room - Installed grab bars Replaced the door with a curtain Entrance - Installed a mini-slope (to level the floor) Attached a door fixing device	Case G	Toilet room - Installed grab bars Bedroom - Installed grab bars Entrance - Installed a mini-slope (to level the floor) Attached a door fixing device Kitchen - Changed faucets
Case F	From living room to toilet room - Installed a fixed L ceiling lift from toilet room to bathroom - Installed a fixed L ceiling lift Toilet room - Leveled the floor Installed grab bars Replaced the front wall with a three panel sliding door Entrance - Made a space below the shoe rack for a wheelchair	Case H	Bedroom - Installed flooring Replaced the door with a sliding door Living room - Installed flooring Kitchen - Changed faucets Toilet room - Installed grab bars Bathroom entrance - Installed grab bars Installed a mini-slope Bathroom - Installed a wooden bench Installed plastic flooring Entrance - Installed a mini-slope (to level the floor) - Installed grab bars
Case I	Bedroom - Installed flooring Kitchen - Changed the entire sink Installed flooring Toilet room - Replaced the door with curtain		Bathroom - Installed grab bars Installed a wooden bench Installed plastic flooring inside (to level the floor) Entrance - Installed a mini-slope (to level the floor)

2.2. Current State of Use of Modified Homes










Most of the disabled recognized more comfortable living in their homes after the following changes were made (Table 4): replacing the toilet room door with a curtain; installing a mini-slope at the entrance; and installing plastic flooring in the bathroom (to level the floor). Ceiling-driving lifts or grab bars were also largely installed for their convenience, but some of them were not used because some disabled people failed to get accustomed to them. Furthermore, many disabled people living alone, the modification of whose homes largely focused on helping them to move easily around their homes, chose not to install ceiling-driving lifts. Therefore, they came to use their bathtubs infrequently, and their bathtubs were being used as storage space.

2.3. Problems after Home Modification

Problems found after home modification in cases A to I are presented and described in Table 5.

In case A, ① a ceiling-driving lift that goes through the living room, the kitchen and the toilet room was installed, but, the lift track is disconnected and then reconnected at the kitchen because the storage space placed on the ceiling of the kitchen stands in the way of the track. As the home was a rental apartment, removal of the storage on the ceiling had not been allowed, and thus, the lift was installed disconnected causing inconvenience.

Table 4. Uses of Modified Homes

	Uses of modified areas		Uses of modified areas		Uses of modified areas
A		B		C	
D		E		F	
G		H		I	

Furthermore, ② the fixed ceiling-driving lift installed on the bedroom is restricted in movement. The user regrets not having installed an X-Y ceiling lift, which allows more free movement than the fixed lift. In addition, ③ in order to level the floor, wood flooring was installed in the bathroom, but since wood does not perform well in high moisture areas, the material was impractical.

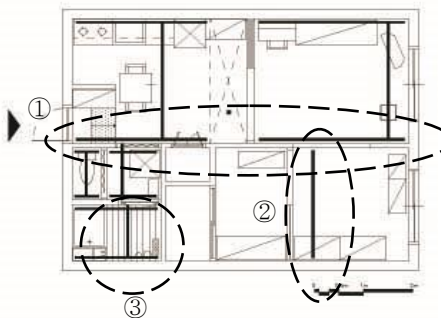
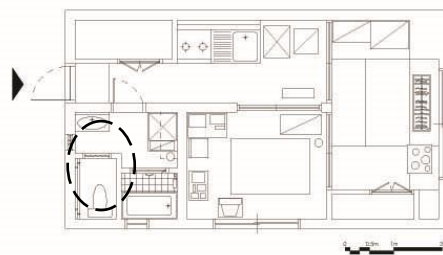
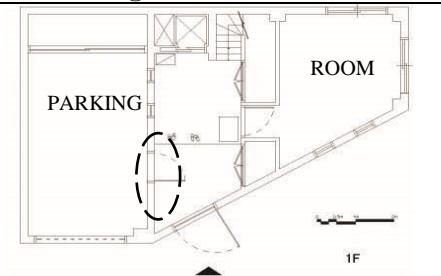
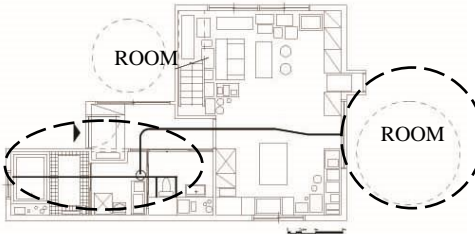
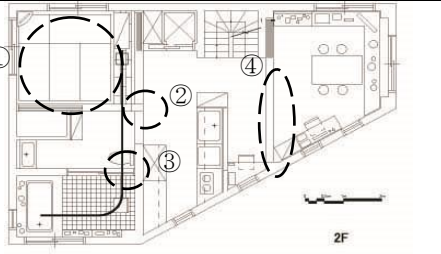
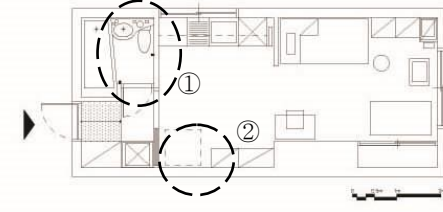
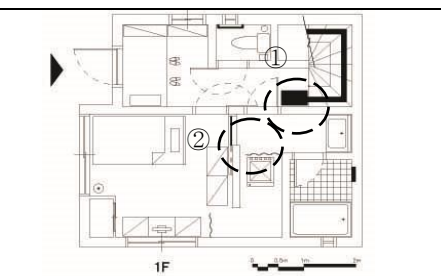
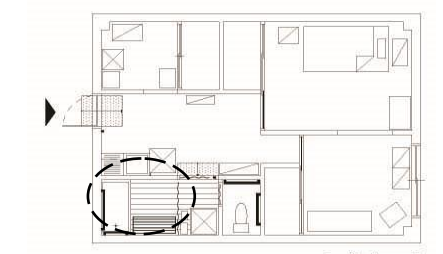
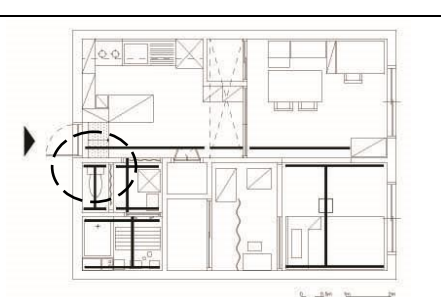
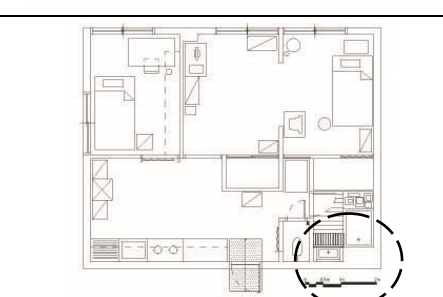
In case B, the garage is attached to the entrance on the first floor to make it easier for the user to get in or out of her car. However, as the floor levels of the garage and the entrance are different, it is nearly impossible for the wheelchair user to move between the two spaces without help. Help from a caregiver is still needed.

The user started using her second-floor dressing room as her bedroom to avoid the inconvenience of moving between the second and third floors where her previous bedroom is located. On the second floor, ① a small dressing room was made next to the shower room and toilet room to make it convenient for the user to change clothes, and a fixed ceiling-driving lift was installed in the room. Still being restricted in movement, the user regrets not having installed an X-Y ceiling lift instead of the fixed lift.

In addition, ② a pillar-like wood frame is located in an open space near the dressing room, posing a hindrance to wheelchair use. ③ as the dressing room next to the toilet is being used frequently, the toilet bowl placed where the lift track passes, with no wall shielding it is unsightly. ④ despite the request to level the floors of the kitchen and the living room, a threshold was built beneath the door between the two spaces, making it difficult for the user to go across the threshold.

In case C, a stair lift leading to the second floor has been installed, but it is rarely used because operation is time consuming and inconvenient. Furthermore, the door of the bedroom leading to the toilet room has been replaced with a sliding door, but because of the threshold beneath the door, a wheelchair cannot be used without help.

Table 5. Problems after Modification

	Floor plan and Problems		Floor plan and Problems
A		E	
B 1		F	
B 2		G	
C		H	
D		I	

In case D, the entrance slope is easily accessible from inside the home, but difficult to access from outside because the corridor is narrow. In case E, a grab bar has been installed next to the toilet. As the space between the wall and the grab bar is wide, the user's arms often slip into the space and her head bumps against the wall. In case F, as the bedroom is far away from the bathroom and toilet room, using a ceiling-driving lift between the bedroom and the bathroom or toilet room is time consuming and inconvenient. In case G, as there is no electrical outlet in the toilet room, using a bidet is not easy.

Additionally, a wheelchair sometimes collides with the wall during reverse parking, damaging the wall. In case H, as a sink, designed for use by able-bodied people, has been installed, the wheelchair user has difficulty using it. In case I, as a fixed-driving lift has not been installed, the user can hardly use the bathtub, so the bathtub is being used as a storage space for cleaning tools.

3. Reasons for the Need of Re-modification

3.1. Potential Problems before Home Modification

Problems often faced before home modification include 1) a short preparation period, 2) insufficient knowledge or information about home modification, and 3) the signing of a contract with an irresponsible home modification company. Of the nine disabled people, only two disabled persons—A and G—spent more than one year on the preparation of home modification, and the other seven disabled people spent just several months.

In addition, all of the subjects, with the exception of subject B, did not do sufficient research to collect relevant information before home modification. A lack of knowledge and ideas about how to modify their homes, they uncritically accepted almost all the recommendation made by home modification companies or related experts (Figure 3).

When it comes to selecting a home modification company, many of the subjects signed contracts with the companies recommended by district or villages administrative offices without doing research or asking others to help to find a more capable company. This was because they had no friends or acquaintances who had ever modified their homes, and thus had no one to ask for help. Furthermore they blindly believed that it was better to follow what home modification companies said on the grounds that the companies knew far more than them about home modification.

Homes were modified when most of the subjects had not prepared enough for the modification before proceeding. Therefore, collecting information about home modification from organizations providing services to the disabled is essential and organizations need to work to facilitate easier access to such knowledge and information.

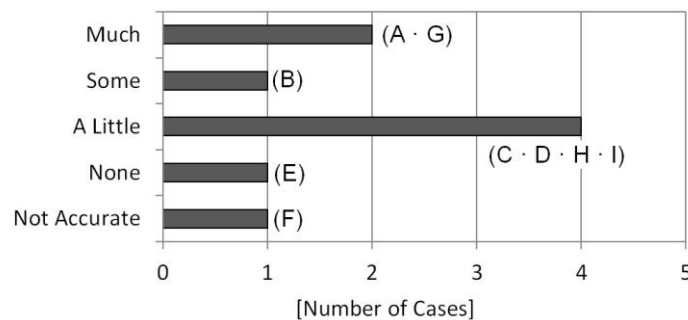


Figure 3. Knowledge & Information Recognized before Home Modification

3.2. Potential Problems during Home Modification

One of the problems that frequently occurs during home modification is involved with the way and how much home modification companies and the disabled exchange their ideas. When judging from the number and duration of the meetings between both sides, it is easily assumed that one of the subjects sufficiently discussed with home modification companies about how to modify their homes (Table 6). In addition, in only one or two cases, pictures, photos or magazines were used to help communication between both sides. Due to insufficient and inefficient communication, what the disabled wanted was not fully reflected in home modification, and thus some spots of the modified homes still cause inconvenience.

A representative example involved eliminating differences in the levels of floors. Even after home modification that included eliminating differences in floor levels, thresholds with a height of about 1 cm remained, making it difficult for wheelchair users to go across the thresholds without help. Resorting to verbal language alone often led to misunderstandings, so it is recommended that they make use of photos, or magazines to convey their ideas more accurately and efficiently.

Table 6. Meetings between Home Modification Companies and the Disabled

	Number of meetings	Total number	Total hours		Number of meetings	Total number	Total time
A	-	-	-	F	-	-	-
B	Once a week for 60 min (for two weeks)	Two times	2 hours	G	Once	Once	60 min
C	Once a week for 10 min (for one month)	Four times	40 min	H	Once	Once	60 min
D	Twice a week for 60 min (for one week)	Two times	2 hours	I	Once	Once	60 min
E	Once	Once	-	-	-	-	-

3.3. Potential Problems after Home Modification

Problems frequently found after home modification are as follows: 1) modified homes are not as convenient as expected and thus need to be modified again; 2) as the disabled deteriorate in their symptoms over time, their modified homes are often placed in need of updated re-modification; 3) the subjects do not use parts of modified homes because of psychological changes (Table 7).

With regard to problem 1), the stair lift in case C, the garage in B and the sliding door in C are presented as examples. The stair lift is time consuming to operate and cannot be used without help. It is difficult for the subjects to move around by wheelchair because the threshold creates a difference in floor level between the garage and the porch.

The examples of problem 2 include: changes in the user's disability (case E); the need for re-modification due to changes in the caregiver's conditions (case A); and the shift of the main living space at home (cases A and B). Of these examples, changes in the user's disability are the main reason for the need of re-modification.

Problem 3 includes the following: the results of home modification are not as expected; and things which were not thought to be problematic become problems after modification.

Table 7. Problems Found after Modification

	Case	Floor plan and picture	Description
①	C		<p>The stair lift is time consuming to operate and cannot be used without help, so it is rarely used.</p> <p>Due to the threshold beneath the sliding door, the user in a wheelchair cannot move out of the room without help.</p>
	B		<p>The garage is attached to the entrance on the first floor, but the floor levels of the two spaces are different.</p>
②	B		<p>Initially, the bedroom was on the third floor, the shower room, toilet room, and dressing room on the second floor. Because of the trouble of moving between the second and third floors, the user uses the dressing room as a bedroom.</p>
	F		<p>As the bedroom is far away from the shower room and toilet room, it is expensive to install a ceiling-driving lift and takes a long time to move between those rooms.</p>

4. Evaluation after Home Modification

4.1. Satisfaction and Dissatisfaction after Home Modification

Interviews were held to find out the subjects' satisfaction or dissatisfaction with modified homes. The results showed that seven out of nine of the disabled persons were satisfied with their modified homes. Those living with their families said that they had decided to have their homes modified to become less dependent on their caregivers and that home modification has made their lives much more convenient. Modification of the homes for the disabled living alone largely focused on improving the movement of a wheelchair within their homes, and they were mostly satisfied with their modified homes. Two of the subjects said they were not satisfied with their modified homes because parts of their homes still needed to be modified and their modified homes were not convenient enough.

Most of the subjects who have had their homes modified expressed satisfaction with the modifications, saying that what they had wanted to change had been modified. Some, however, expressed dissatisfaction with modified homes due to the following reasons: 1) while homes were modified, problems such as differences in floor levels were newly created; 2) some of modified homes have developed problems over time; and 3) the modified results were not as satisfactory as had been expected.

4.2. Impractical Modification and Dissatisfaction with Results of Alternative Modification

Some of homes could not be modified as had been planned due to several reasons. 1) when it came to modifying public rental houses, major changes were not allowed, and thus a ceiling-driving lift could not be installed. Therefore, for the installation of a lift, two steel columns were erected inside the home, which occupied some space, making it difficult for the user in a wheelchair to move around in the home. Furthermore, 2) most of the subjects wanted to eliminate the difference in the floor levels of the living room and the bathroom, but it was nearly impossible in most cases to rebuild the floors of the two spaces to remove the level difference due to water drainage or financial issues. Wood flooring was installed instead in bathrooms to eliminate any difference in floor levels. However, when the difference reaches more 20cm, the disabled have no choice but to seek help from caregivers to use bathroom.

Additionally, 1) facilities such as stair lifts and elevators which allows the disabled to move between levels easily could not be installed due to lack of space. Also, 2) it was nearly impossible to expand the inner spaces of homes even though wheelchair users need open spaces to facilitate movement at home. 3) Furthermore, sinks in kitchens, designed for the use of non-disabled people, were inconvenient for the disabled in wheelchairs to use because the sinks had no open space beneath them.

4.3. Relation between Satisfaction with Modified Homes and the Need for Re-modification

The subjects expressed satisfaction with their modified homes largely because their homes became more convenient after modification. This is not to say that they had no problems with their modified homes, nor that they do not want to re-modify the homes. While, it is true that their homes have become more convenient after modification, some parts of their homes are still inconvenient and needed re-modification.

5. Conclusion

This study researches the modification of homes, where people spend a large part of their lives, focusing on the homes of the disabled, who are likely to spend more time at home. Specifically, the study explores the current state of the use of modified homes, problems with home modification, and why many of modified homes are in need of re-modification.

This study found that home modification for the disabled can be different depending on whether they are living alone or with others. When they live with other people, ceiling-driving lifts or stair lifts are installed, largely to make looking after them easier for those around them. When they live alone, home modification often includes securing space for moving around rooms, leveling floors, and installing grab bars to help them live more independently.

Most of the subjects who had had their homes modified expressed satisfaction, saying that their lives had become more convenient after modification. However, some modified parts of their homes are still inconvenient to use because the modifications were carried out without much preparation. Furthermore, as disabilities deteriorate over time, the modified homes need to be updated accordingly. This means that many modified homes are in need of re-modification. The government, therefore, should introduce a program that helps them to modify their homes regardless of whether they previously received home modification assistance.

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