

## Space Utilization of Regional Nucleus Day Care Facility Case Study in Abu town Yamaguchi Prefecture

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### Abstract

This paper aims at explaining the effect on network formation of day service facilities for old people in depopulating rural area by the use sphere analysis of regional nucleus facility. The results are as follows; 1) The facility with satisfactory equipment is maintained for the old people who hope special rehabilitation or bathing. 2) The training room is used for lunch, living and training room, and it is possible to diverse to some functions by chair moving due to the layout that doesn't need desk moving. 3) Because the extra space is used as escape place at chair moving time and user's choice of location in free time increases, so it is efficacy to ensure extra space with sofa and so on. 4) In bathing service that requires the most assistance of the staff in the morning, the users can move the slope by the shower carry in general bathroom, so assistance burden of the staff is reduced. Therefore, the regional nucleus facility having these functions is maintained as a facility for the elderly with high degree of care and needing professional rehabilitations.

**Keywords:** Day Service; Settlement Form; Location; Municipal Merger

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### 1. Introduction

The number of the elderly people with care level 4 and 5 increased from 736,000 people in 2000 to 1,337,000 people in 2010. And it is an issue that the degree of care of the elderly people is becoming high. In 2014, 524,000 elderly people are waiting to enter a special nursing home accepting many elderly people whose degree of care is high. However, to establish a new special nursing home is difficult because the facility capacity is limited by the self-government body. Many of waiting elderly people use a day care facility or home care support. So, the user's degree of care of a day care facility is becoming high. Recently, these are issues that it isn't enough to care for each user and the users can't calm down like their home in a large-scale day care facility. So, it is said that a small-scale day care facility renovated a private house is good. However, the facility demand can't be covered by only a small-scale day care facility, so a large-scale facility is needed. Most large-scale facilities were established together with a special

nursing home before 2000. And they function a regional nucleus facility. The regional nucleus facilities can accept the elderly people whose degree of care is high, because the facilities have satisfactory equipment such as a special bathroom.

Therefore, it is useful to build network management between a regional nucleus facility and some small-scale day care facilities in the area where distance to the facility of the user is large. The network management effect is demonstrated by placing a regional nucleus facility as the facility accepting the elderly people whose degree of care is high, and placing some small-scale day care facilities as the facility accepting the elderly people whose degree of care is low. So, it is important to use the existing regional nucleus facilities efficiently and improve QOL of the users.

However, in case of accepting many elderly people whose degree of care is high, it is predicted that the transportation time becomes long and the users need the assistance such as walk, bathing and excreting. So, it is predicted that the staff's working is increased even if facility equipment is well, due to carry out a decided life program by the number of limited staff. Therefore, it is important to verify whether it is possible to accept the elderly people whose degree of care is high in a regional nucleus facility, by the survey on space layout, facility equipment, user's

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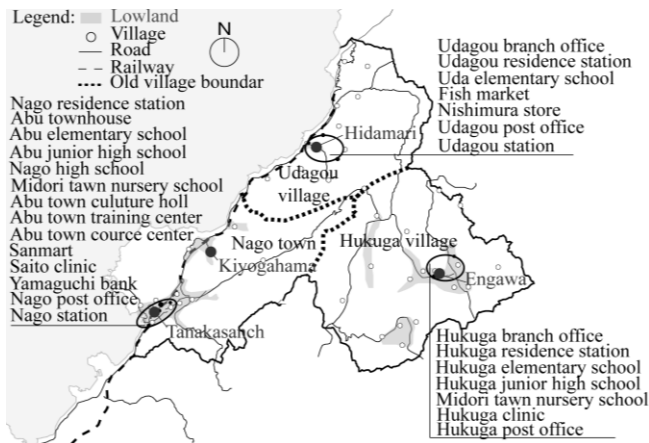


Fig.1. Space Characteristics of Subject Area and Position of Main Facilities

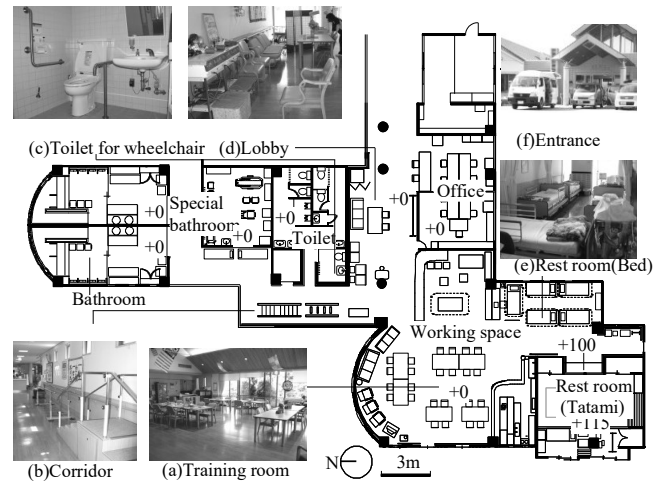


Fig.2. Plan of Kiyogahama

living activities and staff's assistance.

## 2. Purpose and Method

This paper aims at explaining the effect on network formation of day service facilities for the elderly people in depopulating area by the survey on distance to the facility of the user analysis of a regional nucleus facility in Abu town where builds a network management between a regional nucleus facility and some small-scale facilities.

About the investigation, firstly the building data collection and measurement of the facility was done. Secondly the collection of facility user registration data collection and the usage research were done in 5.31-6.5, 2010.

## 3. Space Layout and Use Characteristic

### 3.1 Subject Area

Nursing home for the aged, a regional nucleus facility "Kiyogahama" and a home care support center were established in accordance with the introduction of the health coverage system in 1998, and a special nursing home was established in 2000, and it is placed on the special incorporation that shoulders elderly people welfare of the town.

After the construction of the regional nucleus facility was completed, dealing with the small-scale facility establishment was started, and social welfare corporation was established "Engawa" that the farmer house was reused in 2006 in Fukuga area. After that, "Hidamari" has established in Utago area and "Tanakasanchi" rented a timber house has established one after another in Nago area in 2008. As a result, the network management of the small-scale facilities had been built at the old town and villages before the merger.

### 3.2 Space Layout

Plan of "Kiyogahama" is shown in figure 2. The facility is constructed 2 zones around a training

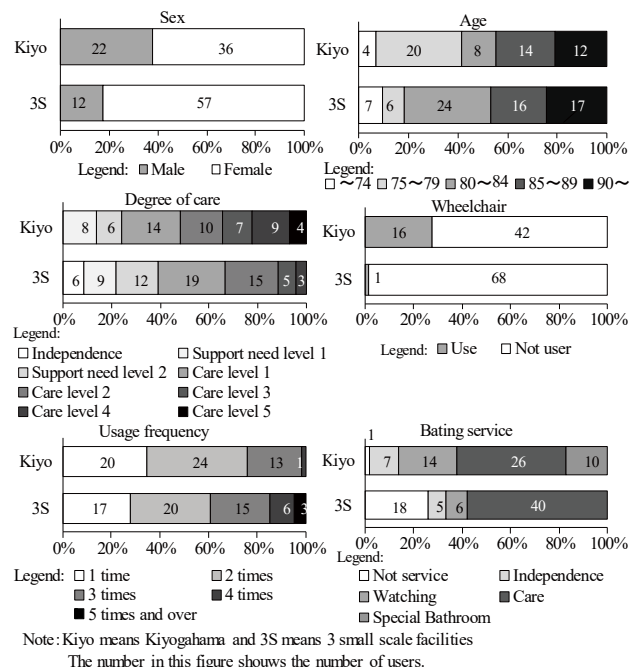


Fig.3. User Properties and Use Pattern

room. One zone is a rest room, a working space and an office, and another zone is a toilet and a bathroom. The facility has a special bathroom and a toilet for wheelchair users. There is an extra space with a sofa and a massage chair, and this space is used for relaxing or taking short sleep. This space is a characteristic of this facility, because many facilities don't have it. The working space is used for preparing lunch. There are a tatami room and a bed space which is placed 5 beds. Rehabilitation devices are located in the lobby and the corridor.

### 3.3 User Properties and Use Pattern

User properties and use the pattern of "kiyogahama" and 3 small-scale facilities are shown in figure 3. About the sex of day care facility users,

Table.1. The User Information and Role Sharing of the Staff in Investigation Period

Staff	Sign	Age Sex	31-May	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun
Staff	I	M36	○●▲△	○●▲	○●□▲△	○●▲	○●△	○●▲
	M	F49	■	■	■	■△		■△
	K	F50	○●□△	○●□△	○△	○●▲△		○●□
	K2	F45	○▲△		○●▲△		○●△	○●▲△
	H	F40	○●	○●▲△		○	○●□	○●
	Y	F43		○△		○●□△	○●▲	
	M2	F43	●□	●□		●□	●□	
	S		○▲	○▲		○▲	○▲	
	Y2	F45					■	
	T		○		○		○	
User	Support need level 1 and 2		6	5	2	3	3	1
	Care level 1		2	4	6	5	3	5
	Care level 2		2	5	1	2	3	2
	Care level 3 and over		8	3	2	6	6	4
	Total		18	17	11	16	15	12

Legend: ○:Pickup, ●:Bathing service, □:Exercise and recreation, ■:Bital check and rehabilitation, △:Lunch, ▲:Office work  
 Note:The top of list shows a manager and the second shows a nurse.  
 ⊙ shows the staff in charge of pickup

there are 40% of men on “Kiyogahama”. On the other hand, there are many women with about 80% in 3 small-scale facilities. About the degree of care of users and wheelchair use condition, in “Kiyogahama”, the users with the care level 3 and over occupies 35%, and user rate of high degree of care is high. Also the wheelchair user occupies about 30%. On the other hand, there are many users with the care level 1 or 2, and the user rate of high degree of care is low in 3 small-scale facilities.

About the number of the use times of the facilities in a week, the users using the facility once and twice a week are about 80% in “Kiyogahama”. On the other hand, there are many users of 3 times and over with 40% in 3 small-scale facilities. About the bathing service, high rate of the special bathroom user with 17% is characteristics in addition to bathing care (45%) in “Kiyogahama”. Many users receive the bathing care in 3 small-scale facilities, but 30% users don't receive bathing care.

### 3.4 The User Information and Role Sharing of the Staff in Investigation Period

The user information and role sharing of the staff during an investigation period are shown in table 1. The number of the users is 15 on the average of 1 day. The max number of the users with the care level 3 and over is 8, and the users with the care level 4 or 5 is 5. A nurse assists the users with the care level 5 in all day. On the other hand, there are some users whose degree of care is low. They use this facility before the small-scale facility established, and they hope to use the facility with satisfactory equipment.

The number of the staff is 6 on the average of 1 day. The manager performs the operation management business and the care business such as transportation

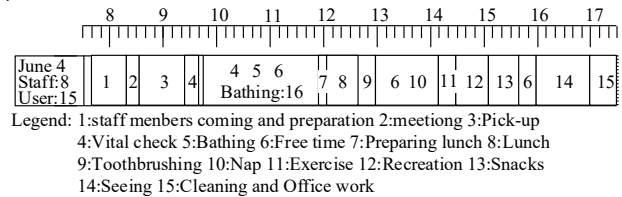


Fig.4. Life Program on 1 Day

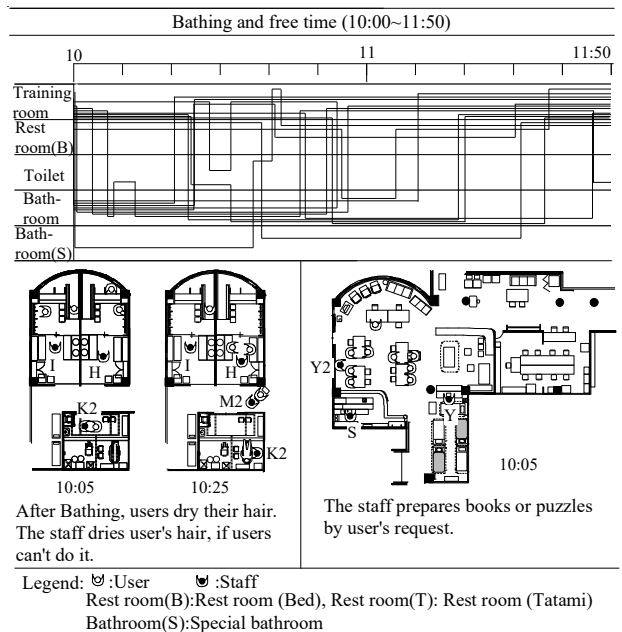


Fig.5. Free Time and Bathing Service

of the users and consultation. The nurse offers rehabilitation service and nursing service such as tube feeding and suction. The other 4 staff perform all care business such as transportation of the users, assistant for bathing, preparation for lunch, assistant for walking and so on.

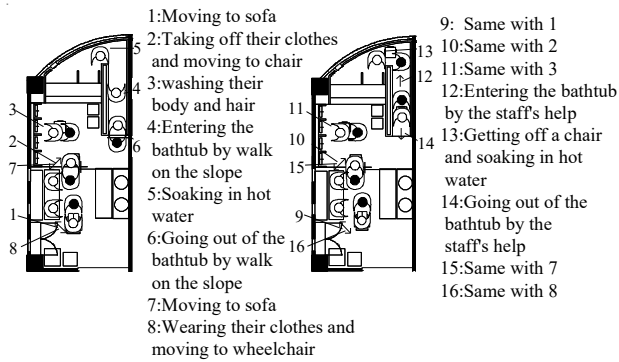
## 4. The Life Style on 1 Day of the Day Care Facility

### 4.1 Life Program on 1 Day

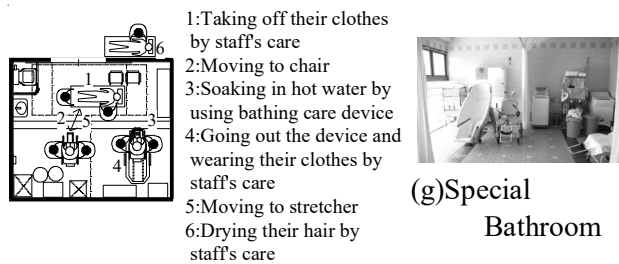
Life program on 1 day in survey period is shown in figure 4. Life program on 1 day is composed by 1) transportation 2) vital check 3) free time, bathing 4) lunch 5) nap 6) exercise, recreation 7) snacks 8) seeing. Life program is same through a week, but there was the day when fishing and making of hotcakes were carried out in the afternoon. So, this paper analyzes usage of facility in June 4.

### 4.2 Transportation and Vital Check

6 staff go to pick the users up by 4 cars. 4 staff go to pick the users up by 2 wheelchair lift cars in Nago area, because there are many users whose degree of care is high. The staff goes to pick Udago area users up by a van, and the staff goes to pick Hagi city users up by a mini car.



(a) Users can walking (b) Users can't walking  
Fig. 6. Bathing Method of Wheelchair Users



(g) Special Bathroom  
Fig. 7. Bathing Method in the Special Bathroom

The staff waiting at the facility takes the users to their seats, when the car has arrived at facility. The users sit down on the bench and change the shoe. The wheelchair users can enter the facility without minding the other users, because the entrance is wide. A nurse and a staff perform a vital check.

### 4.3 Free Time and Bathing Service

The scenes of free time and bathing service are shown in figure 5. Each staff takes charge of care of bathing and watching users. The wheelchair users can take a bath in the general bathroom, because a slope is installed in the general bathroom. Average of the bathing time is 40 minutes. The bathing time of the wheelchair user is also 40 minutes, because a staff assists the users quickly. A staff takes the users to the sofa in the bathroom, and assists to take off their clothes (Figure 6). Next, a staff assists to wash their hair and body. And the users enter the bathtub. The wheelchair users enter the bathtub by walking on the slope when the users can walk, and the wheelchair users enter the bathtub by the staff's help when the users can't walk by themselves. Staff's help is to pull shower carry on the slope, so the wheelchair users can take a bath with sitting down. After that, the users wipe their body and wear their clothes on the sofa. A staff takes the users to the wheelchair. This suppresses danger that the users fall down on the shower carry, and the assistance burdens of a staff is reduced.

The bed-ridden person and the user that it is difficult to keep sitting position take a bath in the special bathroom. 2 staff take off their clothes on the

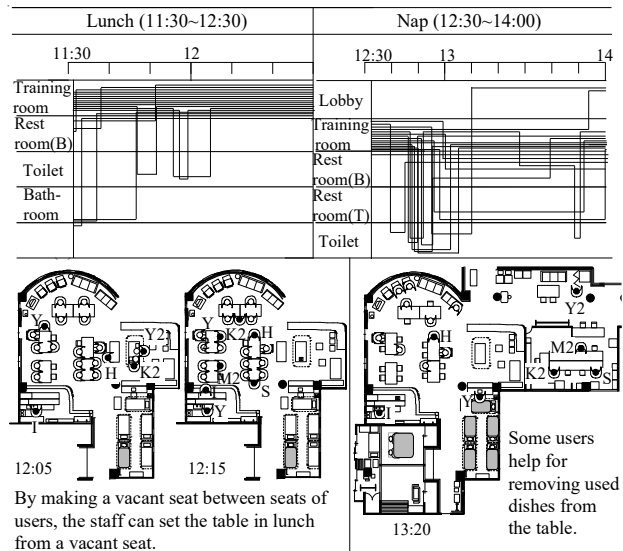


Fig. 8. Lunch and Nap

stretcher or wheelchair, and take the user to chair in the bathroom (Figure 7). The user soaks in hot water by using a bathing care device, after 2 staff wash user's hair and body. After that, 2 staff wipe user's body and wear user's clothes. 2 staff take the users to the stretcher or wheelchair. The bathing time is about 50 minutes, because it needs time to take off and wear user's clothes and move to chair by the staff.

The users arrange their hair in the corridor, because there are many comings and goings of the users in the dressing room. However, at most 18 users take a bath in a day, bathing service is finished until 12:00.

In free time, the users spend the time in coloring pictures and talking. And there are some users resting on the sofas in the training room or the beds in the rest room. The staff are watching and calling out to the users, while providing bathing service. And the staff consider it so that a user can spend it freely.

Therefore, it is evaluated that the users can select place, but the staff can't secure enough time to watch and call out to the users, because the staff are busy with bathing service. Bathing service can be finished in the morning, because the number of using the special bathroom is suppressed by installing a slope in the general bathroom.

### 4.4 Lunch and Nap

The scenes of lunch and nap are shown in figure 8. Lunch cooked in the kitchen of the special nursing home is delivered with a wagon at noon. Each staff takes charge of serving of rice and soup and placing dishes on the table, and prepares lunch in the working space. The time of preparing lunch is about 10 minutes, because the staff don't need to cook lunch. After that, the users start to eat lunch. The staff sit down between the user and start to eat lunch. The staff assists to eat lunch against the users that can't eat by themselves. The staff start to remove dishes, when the

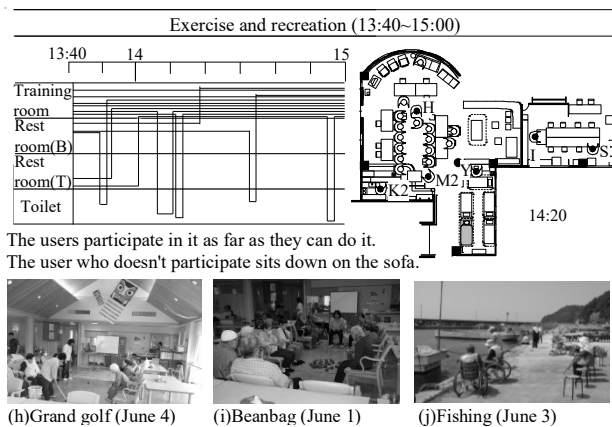


Fig.9. Exercise and Recreation

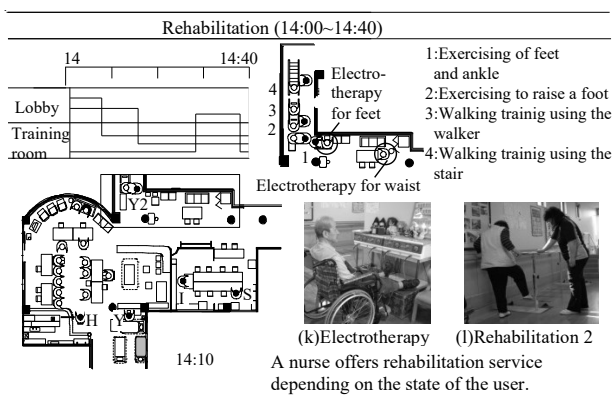


Fig.10. Rehabilitation

staff have confirmed that most of the user have finished eating lunch. The time of cleaning of lunch is about 20 minutes, because the staff don't need to wash dishes, but the staff returns a wagon to the kitchen of the special nursing home. The total time of preparing and cleaning for lunch is about 30 minutes, and the time is extremely shorter than the time (160 minutes) of 3 small-scale facilities that the staff cooks lunch and wash dishes.

The applicants take short sleep in the rest room, after brushing their teeth. The users whose degree of care is high take short sleep on the bed, and the users whose degree of care is low take short sleep in the tatami room. The other users spend the time in resting on the sofas or talking with the users in the training room. The staff take a rest or do office work in the office.

Therefore, it costs much time for bathing service in the morning, but lunch is started at noon. Because, lunch cooked in the kitchen of the special nursing home is delivered with a wagon, and the staff don't need to cook lunch. The staff don't need to wash the dishes, so the staff can secure a time to assist the users, do office work and take a rest. All users whose degree of care is high can take a nap on the bed, because the users whose degree of care is low take a nap in the tatami room. And the users who don't sleep can spend

Table.2. The Relationship Between Space Composition and Usage of Facility

		Characteristics of Space	Characteristics of Space Utilization
Transportation	Entrance	• A large and accessible space *Setting chairs	• Correspondence to wheelchair users *Users can change shoes in the sitting state.
Bathing Service	Bath room	• Installing slope device in bathroom *Installing special bathroom	• Correspondence to wheelchair users *Correspondence to bed-ridden persons
Free Time	Training room	• Setting beds, sofas and massaging chairs	• Users can choose favorite place. • Insurance of space for bed-ridden
Lunch	Kitchen	• Sharing with a nursing home	• Reduction of the preparation and cleaning time
Nap	Rest and Training room	• Tatami room *Setting sofas and massaging chairs	• Insurance of space for users whose degree of care is high • Users can choose favorite place.
Exercise	Training room	• A large floor	• It is possible to devise a desk placement. • Physical exercise is possible.
Rehabilitation	Lobby	• Corner type *Setting electrotherapy	• Users can do freely
Scene Change	Training room	• A large floor *Setting sofas and massaging chairs	• Reduction of the number of times of furniture movement by devising a desk placement *Insurance of standby place for users

the time freely in the training room.

#### 4.5 Exercise and Recreation

The scene of exercise and recreation is shown in figure 9. The staff arrange the chairs so as to face each other, when the users go to a toilet. The users whose degree of care is high are taken to toilet and sofas in the training room by the staff. After the staff has finished moving arranging chairs, the staff takes the users to seats again. And exercise is started by a staff in charge of exercise and recreation. After that, recreation is started. Grand golf was performed in this day. And, the recreations that the users can do with sitting down such as playing with the beanbags were carried out. In addition, fishing was carried out in June 3, and making of hotcakes was carried out in June 5.

Therefore, it is evaluated that preparing exercise goes on smoothly, because a desk placement was decided so as to move only chairs, and sofas are used as a space of the escapes for preparing and cleaning. The recreations that the users can do with sitting down are carried out. And recreations of the physical exercise that is needed the large space are carried out, because a large space can be secured.

#### 4.6 Rehabilitation

The scene of rehabilitation is shown in figure 10. A nurse offers rehabilitation service against the applicants. Rehabilitation is walking training and electrotherapy. The user exercises feet and ankle and does walking training using the walker. And some users go up and down the stairs. Some wheelchair users do training for stand up or do walking training. About electrotherapy, there are 1 apparatus for electrotherapy of waist and 2 apparatuses for electrotherapy of foot in the lobby. The lobby is connected with the training room, so the applicants

can use them freely.

## 5. Evaluation of Space Composition

The relationship between space composition and usage of facility is shown in table 2. The training room is used for lunch space, living and training room, and it is possible to diverse to some functions by chair moving due to the layout that doesn't need desk moving. Because the extra space is used as escape place at chair moving time and user's choice of location in free time increases, so it is efficacy to ensure an extra space with the sofas and the massage chairs. The rest room is used for a nap space, and there are bed space and the tatami room. So the users can select the place to take a nap depending on degree of care. The lobby is used for rehabilitation space, and a nurse offers rehabilitation service against the applicants. The lobby is connected with the training room, so the applicants can do electrotherapy freely. In bathing service that is required the most assistance of the staff in the morning, the wheelchair users can move the slope by the shower carry in the general bathroom, so assistance burden of the staff is reduced. And bathing service can be finished in the morning, because the number of using the special bathroom is suppressed by installing a slope in the general bathroom.

## 6. Conclusions

In this paper, the relationship between the user properties and the usage of the facility was examined in the regional nucleus facility accepting many elderly people whose degree of care is high. The results are as follows.

1) In bathing service, the wheelchair users can move the slope by the shower carry in the general bathroom, so assistance burden of the staff is reduced. And the users whose degree of care is high can take a bath in the special bathroom.

2) In free time and exercise, it is possible to diverse to some functions by chair moving due to the layout that doesn't need desk moving, because the training room is large. Because the extra space is used as escape place at chair moving time and user's choice of location in free time increases, so it is efficacy to ensure an extra space with sofas and massage chairs.

3) In lunch time, the time of the total time of preparing and cleaning for lunch is short, because cooking lunch and washing dishes are done in the kitchen of the special nursing home. So, the staff can secure a time to assist the users, do office work and take a rest. At nap time, the users whose degree of care is high can take a nap on the bed, because the users whose degree of care is low take a nap in the tatami room.

4) In the lobby, a nurse offers the rehabilitation service in addition to exercise and recreation. The applicants do walking training. Some wheelchair users do training for stand up or do walking training.

As mentioned above, the life program on 1 day can be executed including the users whose degree of care is high in regional nucleus facility accepting many users whose degree of care is high. The reasons that the life program be executed by the number of limited staff are as follows; 1) the facility have satisfactory equipment for the users whose degree of care is high such as a special bathroom, 2) preparing and cleaning for lunch of the facility is shared with a special nursing home, 3) it is possible to diverse to some functions by chair moving due to the layout that doesn't need desk moving, because the training room is large one room.

And in depopulated area, the possibility that a private sector enters day care business newly is low, and establishing the new facility and repairing the facility is difficult because the financial basis of the local government is weak. In this area, the regional nucleus facility having these functions is maintained as a facility for the elderly people whose degree of care is high and needing professional rehabilitations. In addition, by arranging small-scale day care facilities that provide services for the elderly people whose degree of care is low, the possibility is high that it can improve the amount quality of welfare services and build a regional service network management.

This paper tries evaluation of facility function in a regional nucleus facility accepting many users whose degree of care is high, by based on user's behavior and staff's assistance. And the results will be important resources for considering about efficient management of existing regional nucleus facility.

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