

Characteristics of Use Composition of Day care Facilities for the Elderly by Plan Configuration and Corner Allocation

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Abstract

This study aimed to clarify the characteristics of corner allocation in the users' main room of the newly established elder day care facility in Yamaguchi prefecture, with classifications based on the relationship between the area and plan configuration. The results are as follows; 1) Plan configuration was classified into five types: F0 type, FW0 type, F1 type, F2 type, and F3 type. The index used for analysis was (1) existence of the tatami space in the main room and (2) the number of the rooms not counting the main room. The F0 type—that is, cases of only the main room being a tatami room—was the most common type, with 10 cases out of a total of 24. 2) Corner allocation was classified into three groups: (1) FTL group, which used the corner for three purposes (free use, training, and lunch time); (2) FL group, which used the corner for two purposes (free use and lunch time); and (3) unique groups with other purposes. These three were further classified into six subtypes by the usage of other corners. All corner allocation was based on the FTL+S type, so there was high demand for a nap corner. 3) There were some cases where the corners were divided by furniture. In cases where there was only one room, the staff responded to users' requests for area differentiation by function by establishing boundaries within the space using the furniture and tatami. It is possible to divide one room by function by setting up some dedicated-use corners, but we doubt that doing so serves the users well. Rather, it seems preferable for the space allocation by function to remain dynamic.

Keywords: Day care facilities for the elderly; Dedicated facilities; Plan configuration; Corner allocation

1. Introduction

The day care facility for the elderly was established with a special nursing home (hereinafter referred to SNH) after Gold Plan was introduced. The facilities were for the elderly with low degree of care before 2000. However, the users with high degree of care have increased since the long-term care insurance system was introduced in April 2000. The lunch and training room are clearly decided that the total of two areas is more than 3 m² per person, but other rooms are decided only the appropriate space and equipment. The users have many requests for the facility, but it is impossible to respond all users' requests in the standards. A part of problems is able to solve by devising furniture layout, but many facilities are having these problems.

From the above, this study aimed to clarify actual space usage composition of the newly established day care facility for the elderly in Yamaguchi prefecture, by organizing the characteristics of plan configuration and

corner allocation. About the investigation, firstly, we have collected the facility plans. Secondly, we have created the furniture arrangement by sketching and measuring the furniture. Thirdly, we have done the usage investigation that records the place and action of the users and staffs at intervals of five minutes all day and taken photographs. The investigations were performed from May 2010 to September 2016.

2. Outlines of subject facilities

The number of subject facilities is 23. Table 2 indicates outline of these facilities. Facility S and S' are same facility. However, this facility is regarded as another

Table 1. Standards for establishing the facilities

| Equipment | Necessary |
|-------------------------|---|
| Lunch and training room | - Securing each necessary space - Total area of two rooms is more than 3m²/ person - When the room is enough space for meal service and training, the room can be used for two purposes |
| Nursing room | - Securing suitable space depend on facility capacity. |
| Consulting room | - Independent room is desirable, but space division by partitions is also possible |
| Office | - Securing the space that staff and equipment can be placed |
| Other | - Securing toilet, bathroom, kitchen etc. depending on provided services |

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Table 2. Outlines of subject facilities

| Name of Facility | Capacity | Date that started service | Building construction | Other facility on same building |
|------------------|----------|---------------------------|-----------------------|--|
| A | 10 | Apr. 1995 | RC, one-story | |
| B | 10 | Apr. 1995 | RC, one-story | |
| C | 10 | Apr. 1996 | S, two-story | FLS |
| D | 10 | Apr. 1998 | RC, one-story | |
| E | 10 | Apr. 1998 | RC, one-story | |
| F | 10 | Apr. 2000 | RC, one-story | |
| S ¹⁾ | 15 | Apr. 2015 | RC, one-story | SNH, NH, GH, HNC |
| G | 18 | Apr. 2007 | S, one-story | |
| H | 20 | Apr. 1990 | RC, two-story | SNH, NH |
| I | 20 | Apr. 2000 | RC, one-story | FLS, HNC |
| J | 25 | Mar. 1990 | RC, two-story | MH |
| K | 25 | Apr. 1993 | RC, one-story | SNH |
| L | 25 | Apr. 1993 | RC, three-story | Welfare Center |
| M | 25 | Apr. 1994 | RC, one-story | SNH |
| N | 25 | Apr. 2000 | RC, one-story | SNH, FLS |
| O | 30 | Sep. 1989 | S, one-story | SNH |
| P | 30 | Feb. 1990 | RC, one-story | SNH |
| Q | 35 | Mar. 1994 | SRC, one-story | SNH |
| R | 35 | Apr. 1997 | RC, two-story | FLS |
| S | 35 | Apr. 1998 | RC, one-story | SNH, NH, GH, HNC |
| T | 35 | Apr. 2005 | S, two-story | GH |
| U | 50 | Apr. 2000 | RC, three-story | SNH, HC, HNC, OR |
| V | 50 | Apr. 2000 | RC, one-story | Facility for handicapped |
| W | 50 | Apr. 2008 | RC, four-story | Exclusive occupation house for elderly |

Legend) SNH: Special nursing home NH: Nursing home MH: Moderate-fee home
 GH: Group Home FLS: Facility for livelihood supporting
 HNC: Home nursing care LCH: Long-term Care Health Facility
 DC: Outpatient Rehabilitation
 RC: Reinforced Concrete structure S: Steel structure
 SRC: Steel Reinforced Concrete structure
 * Facility S and S' are same facility, but regarded another facility because the capacity of Facility S decreased in 2015

facility, because the capacity of Facility S decreased, and the usage of the facility was changed in 2015. The number of the independent day care facilities is six, and all of them are the small-scale facilities of the capacity with 18 or less users¹⁾. The number of the day care facilities with other facilities is 17, and the number of the facilities with SNH is biggest with nine facilities. And some facilities of the capacity with 30 and more users are also established with other facilities in addition to SNH, such as group home and outpatient rehabilitation. There are 15 facilities established before introduction of the long-term care insurance system, and these facilities are not based on current standards.

3. Required rooms and area of a day care facility

A day care facility needs a lunch room, training room, nursing room, toilet, bathroom, kitchen, office and consulting room according to the standards. Boundaries of each room regard to divide clearly by wall, door, corridor and so on. In this Chapter, the lunch, training and nursing room which the users stay mainly are focused on, and figure 1 and 2 show relationship of total floor area and the capacity of the facilities.

The area of the lunch and training room occupies around 30% of total floor area when the area of the facility is less than 200 m², and it occupies around 40% when the area is from 200 m² to 400 m²

The nursing room for the user with bad condition was added in the standards after introduction of the long-term care insurance system. So, the rooms are counted as a nursing room in this study, if there are the rooms that have function as a nursing room in the facility established

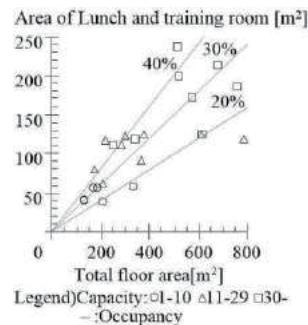


Fig.1. Relationship of total floor area and the area of lunch and training room

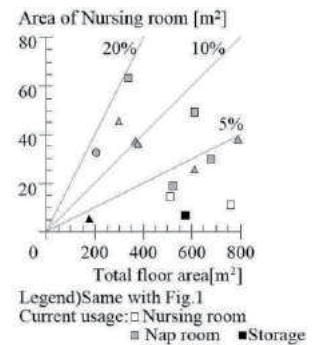


Fig.2. Relationship of total floor area and the area of nursing room

before introduction. So, the number of the facilities having a nursing room is added seven and become 14. There are seven facilities of the capacity with 30 or less users, and the area of six facilities is relatively wide with more than 20 m². On the other hand, five out of seven facilities of the capacity with more than 30 users are less than 30 m² and occupy under 5% of total floor area. Therefore, nursing room isn't secured depend on the number of the facility capacity. In addition, the nursing rooms are used as a nap room in 10 facilities, and the area of this rooms are relatively wide with more than 18 m². On the other hand, there are only two among the facilities of the capacity with more than 30 users, and the area of the rooms is relatively narrow with from 10 m² to 15 m². Especially, nursing rooms are used as a storage in some facilities that the area of the nursing rooms is less than 10 m².

4. Characteristics of plan composition

4.1. Plane constitution of the facilities

The rooms are divided as a main room that users stay mainly and a sub-room that is the room except for main room by based on usage research, because of classification of plan constitution (figure 3). Plan configuration is classified into five types by existence of a sub-room and the tatami space in a main room. F0 type is the type having only main room with no tatami space, and corresponds to two facilities. FW0 type is the type having only main room with tatami space, and corresponds to 10 facilities. And this type includes a lot of independent facilities. In these types, the users always stay in the same room except for bathroom and toilet, because there is only one room. On the other hand, the main room can divide into two spaces in FW0 type, because there is a tatami space.

F1 type is the type having a main room and one sub-room, and corresponds to six facilities. F2 type is the type having a main room and two sub-rooms, and corresponds to four facilities. F3 type is the type having a main room and three sub-rooms, and corresponds to two facilities. In these types, there are no characteristics by existence of combined facility. In addition, the facilities of

| | Sub-Room | | | | Total | |
|-----------|----------|----------|----------|----------|----------|----|
| | Absent | Present | | | | |
| Main Room | F | F0 (1,1) | F1 (3,3) | F2 (2,2) | F3 (1,1) | 14 |
| | F+W | FW0(3,7) | | | | |
| Total | | 12 | 12 | | | 24 |

Legend) Main room Sub-room Tatami
 F0(1,1): Plan configuration name (number of combined facilities, number of independent facilities)
 Note) Combined facilities denote the facilities with special nursing home.

Fig.3. Classification of plan constitution

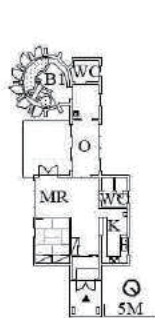


Fig.5. Facility A

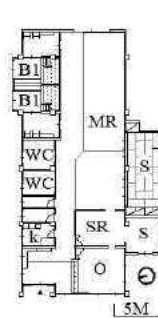


Fig.6. Facility I



Fig.7. Facility R

| | Total floor area[m ²] | |
|-----|-----------------------------------|-----|
| | 250 | 400 |
| F0 | | |
| FW0 | | |
| F1 | | |
| F2 | | |
| F3 | | |

Fig.4. Relations of place constitution and Total floor area

F2 and F3 type have one tatami room in the sub-rooms. It is possible to change the use room according to the program in the facilities having the sub-rooms. Therefore, it is easier for function differentiation in the facilities having the sub-rooms than in the facilities having the only main room.

4.2. Characteristics of plane constitution by facility scale

Characteristics of plane constitution by facility scale

Figure 4 indicates relationship between plan constitution and total floor area. Total floor area is divided into three with the boundary of 250 m² and 400m². F0 and FW0 type are many in the facility of small area. Sub-rooms exist at the area increase. The kitchen and special bathroom are shared in many facilities with another facility, therefore they can secure wider user's stay room than other facilities of same area.

Facility A is FW0 type (Fig.5) and the smallest facility with capacity of 10 users in subject facilities. The tatami space occupies about half of the main room, and there is a step of 400 mm. The wide corridor is used as an office, because there is no office at established. Therefore, the main room is continuous with the bathroom by the office. There are two toilets that are next to the main room and near bathroom, so it is possible to use properly and avoid crowdedness.

Facility I is F2 type (Fig.6) and combined with SNH, and the capacity is 20 people. It is middle corridor plan type, and the main room and corridor are divided by floor finishing instead of partition walls. There are two nap places that are next to the main room and back of staff rest room. There are two bathrooms, and one out of two is used by SNH user. This facility shares the kitchen and special bathroom in SNH. Toilets are equipped for man, female, and staff. The office is placed on the side of the entrance and has a kitchenette, so it is easy to respond for visitors. However, the office is away from the main room, so it is difficult for staff to watch the users from the office.

Facility R is F2 type (Fig.7) and the large facility with a facility for livelihood supporting, and the capacity is 35 users. It is cloister plan type around the courtyard and has the wide main room. There are two nap places that are the tatami room next to the main room and original health guidance room. This facility has both of the general bathroom and special bathroom.

5. Characteristics of space usage composition

5.1. Classification of corner allocation

Training²⁾, lunch, nap, and rehabilitation room are selected as user's basic rooms in life program³⁾, based on usage research. And corners are decided by user's actions

Table 3. Classification of corner allocation

| Group | Corner allocation | Sub-room | | Purpose at Sub-room | | Total |
|-------|-------------------|----------|---------|---------------------|---|-------|
| | | Absent | Present | | | |
| FTL | FTL +S (+R) | 8 | 3 | S | | 16 |
| | | | 1 | R | | |
| | | 1 | S | R | | |
| FL | FTL | | 2 | S | | 7 |
| | | | 1 | S | R | |
| | FL +T | | 1 | S | R | |
| Other | FL +FTS | 1 | 1 | S | | 1 |
| | FL +T or FT +S | 2 | 2 | S | | |
| Total | | 12 | 12 | | | 24 |

Legend) F:Free time T:Training L:Lunch S:Nap R:Rehabilitation

in these rooms. Table 3 indicates relationship of corner allocation in main room and existence and usage of sub-room. Corner allocation is classified by overlapped actions into three groups; FTL, FL and other group.

FTL group has the corner for three purposes (free, training and lunch time), and corresponds to 16 facilities. Among them, FTL+S type having a nap corner in main room corresponds to 13 cases. And FTL type having no nap corner in main room corresponds to only three cases. FTL+S type is many with eight facilities in the plan of only main room type. Even if some cases have sub-room, there are many facilities having a nap space in both of main room and sub-room.

FL group has the corner for two purposes (free and lunch time), and corresponds to seven facilities. In addition, this group is classified into three types by the methods of function differentiation. FL+T type is the type that training corner is separated from FTL type, there is nap space in the only sub-room. FL+T type has the corner for three purposes (free, training and nap time), and users can choose favorite place in free time. FL+T(FT)+S type is the type that a nap corner is separated from FL+FTS type, and there is each corner for three purposes (training, lunch and nap time). Moreover, there is also FL+FS type as other type, and corresponds to one facility.

Therefore, there are many facilities of FTL group having the corner for three purposes (free, training and lunch time). In the cases having sub-room, almost of sub-rooms are used as a nap room. In addition, there are many facilities having independent nap space in the main room. It is because that a nap is the only inactive program.

5.2. Relations of area of main room scale and corner allocation

Figure 8 indicates relationship between main room scale and corner allocation in order to clear the characteristics of corner allocation. There are differences by existence of sub-room in same group. So, FTL group is divided into three types; FTL+S one room type, FTL+S having sub-room type, and FTL type. And FL group is divided into two types; FL one room type, and FL having sub-room type. Therefore, there are 6 types including other type.

FTL+S one room type corresponds to eight facilities, and the area of main room in five facilities is under 100 m². All facilities have tatami space in this type, because

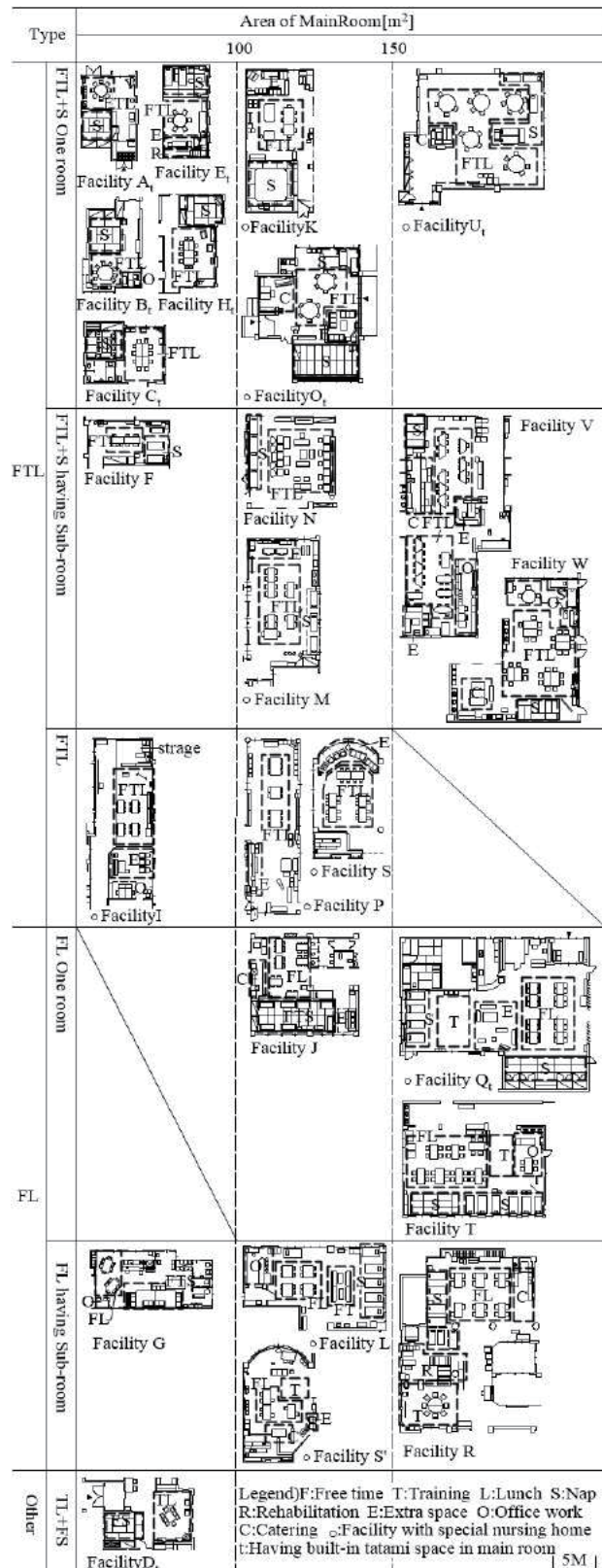


Fig.8. relationship between main room scale and corner allocation

seven facilities have built-in tatami and another facility has retrofitting tatami. Tatami space is generally used for a nap, so a nap space can be divided clearly. There are also some small facilities having a nap corner, so a nap space is higher priority.

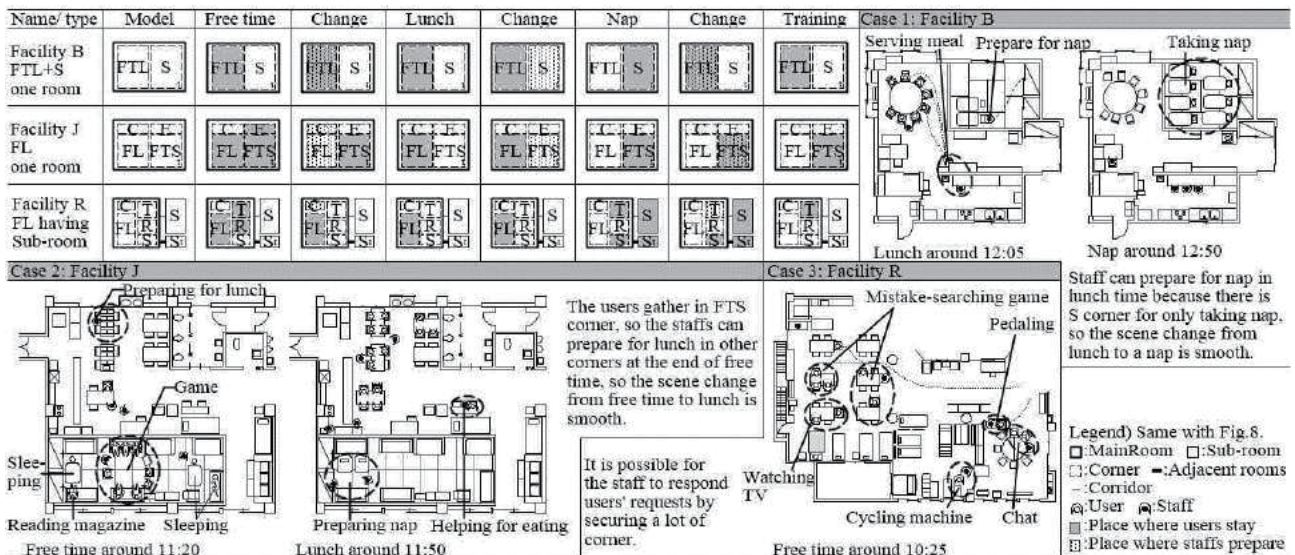


Fig.9. Life style of facility B, J, R

In FTL+S having sub-room type, the area of four out of five facilities is 100 m² or more. And a nap corner is placed in main room, even if the facilities have another nap room. This nap corner is for the supply of more nap space and for the users that always need watching such as the handicapped and users with high degree of care. On the other hand, the sub-room of facility W is used as a rehabilitation room, so this facility has to secure wider nap corner in main room than other facilities. And, this facility prioritizes full equipment for user's independent life.

FTL type has no nap corner in the main room, because there is enough space for a nap in the sub-room. Therefore, this type can secure an extra space with sofas and massage chairs, because there is enough space in the main room. All facilities of this type are under 150 m² in the main room, so is it is difficult to accept many users and the users with high degree of care.

FL one room type is the type that separates the spaces for training and lunch time in one room. So, there is no facility that main room area is under 100 m², because wide space is needed. However, facility J that the area is relatively small corresponds to this type. Facility J has enough tatami space that all users can use together, so it is used as FTS corner having three purposes (free, training and nap time). In the facilities that the area is over 150 m², there is each corner of training, lunch, and nap time. The training corner has no furniture, but it is easy to change furniture layout by moving chairs from lunch corner.

FL having sub-room type needs as wide space as FL one room type, but facility G that the area is relatively small corresponds. Facility G has two corners with different preparation by arranging the table for lunch and inactive training in FL corner and sofas in FTS corner, so the users can choose favorite space. In addition, sofa has a role as a nap space. Another is TL+FS type, and it is the type depending on user's request for using tatami space in not only nap time but also free time.

From the above, many facilities with small main room

correspond FTL group that users stay same corner all day except for nap time. Moreover, corner allocation is FTL+S in the facility with only main room. Corner allocation can change to of FL group with increase of the main room area, and some facilities have an extra space. Therefore, FTL+S one room type is base corner allocation and changes to other types by function differentiation according to the area of the main room and existence of sub-rooms.

5.3. Case study

We have analyzed the places and activities of the users and staffs in scene changes in order to clarify the usage characteristics of the space by corner allocation (Fig.9). And, we have chosen facility B, facility J, and facility R as typical cases from FTL+S one room type, FL one room type, and FL having sub-room type. If the places of users and staffs in scene changes are different, it means that the scene change is easy because staff can prepare for next program at the corner where there are no users.

In the facility B which is FTL+S one-room type and a relatively small area, the users stay at the FTL corner all day and take lunch at the same seat. So, the staffs need to pay attention to the users for lunch preparation. On the other hand, the staffs can prepare for a nap easily at nap corner in lunch time. In addition, the scene change from a nap to training is also easy, because it is only moving to FTL corner. So, it is possible to smoothly change scenes from lunch to nap and training.

Facility J is FL one room type and has four corners; FL, FTS, extra space, and meal service corner. At free time, users stay FL corner, FTS corner, and extra space, and they can choose favorite space. Before lunch time, the users play game on FTS corner, so the staffs can prepare for lunch on FL and meal service corner. At lunch time, the staffs can prepare for a nap. Training corner is same with nap corner, but it is possible to change scenes relatively smoothly by using sofas as standby place for the users. So, it is possible to smoothly change scenes

from free time to lunch, a nap and training. On the other hand, a few users continue a nap on the side of the users who take training, so it is an issue to secure an independent nap space.

Facility R is FL having sub-room type and has wide main room and the largest number of corners; FL, training, nap, rehabilitation, and meal service corner. Two sub-rooms are used as nap rooms. At free time, the staffs can respond individually according to user's request by using all corners in the main room. And they try to secure privacy using partitions in nap corner. The users take lunch at FL corner, and preparation is relatively easy because of securing meal service corner and wide back passages of chairs. There are three spaces for a nap; two nap rooms and one nap corner in the main room. The staffs don't need to prepare for a nap by the permanent beds. The users who don't take a nap stay at training corner etc. Furniture movement is necessary before training time, but it is also smooth because the staffs prepare for it in a nap time. So, it is possible to smoothly change scenes from free time to lunch, a nap and training. On the other hand, it seems that there are some nuisances such as sound and light by performing some activities at the same time in one room.

6. Conclusions

- 1) Plan configuration was classified into five types: F0 type, FW0 type, F1 type, F2 type, and F3 type. The index used for analysis was (1) existence of the tatami space in the main room and (2) the number of the rooms not counting the main room. Sub-rooms exist as the total area of the facility increases. FW0 type is the type having only the main room with tatami space, it is the most common type, with 10 out of total of 24 facilities.
- 2) Corner allocation was classified into three groups: (1) FTL group, which used the corner for three purposes (free, training and lunch time); (2) FL group, which used the corner for two purposes (free and lunch time); and (3) others, with other purposes. These three are further classified into six types by the usage of other corners. FTL+S one room type is base corner allocation, and changes to other types by function differentiation according to the area of the main room and existence of sub rooms.
- 3) Almost sub-rooms are used as a nap room, and nap corner in the main room is generally independent corner in also small-scale facilities, so a nap space is higher requirement and priority in function differentiation.
- 4) It is easy to change the scene from a nap to training in the facilities of FTL group, the scenes from lunch to a nap and training in the facilities of FL group. Individual correspondence depending on a variety of user's request is possible by securing many corners.

As mentioned above, there are the standards for only lunch room, training room, nursing room, and others that are office and water section function, but many other

equipment is needed to response user's requests, and a part of them are solved by devise furniture layout. And, the independent nap space is the highest requirement, and training and lunch space tend to differentiate as the facility scale increases. It is because that a nap is the only inactive program, and it is important to secure an independent nap space and it becomes easy to change scenes. In addition, it is possible for staff to respond user's requests individually and change scenes smoothly by dividing into some dedicated-use corners. Also, smoothly change scenes is possible by using sofas etc. as standby places for the users when the staffs prepare for next program.

However, it seems that there are some nuisances such as sound and light by performing some activities in one room. Especially, the places for a nap need attention, because a nap is the highest requirement and only inactive program. Moreover, it is worried about becoming narrower space for each action by setting some corners. Therefore, it is important to not only meet the standard but also plan including furniture layout according to usage at the design stage of day care facilities.

7. Notes

- 1) The facilities with capacity of 18 users or under was decided as a community-based day care (small-scale day care facility) since April 2016.
- 2) Training means exercise and dynamic recreation for all user, not including muscle training using instrument for some user.
- 3) Life program is composed by transportation, vital check, free time, bathing, lunch, nap, training and snacks. Life program is same in all facilities. However, start and duration time of the program vary slightly depending on the facility.

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