

Evaluation of improvement technique and lifestyle of households on public housing (2DK) improved the equipment for aged households

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Abstract

The purpose of this paper is to evaluate the improvement technique of the public housing "Two rooms and eat-in kitchen, one utility room type of housing unit", which was only improved the equipment and the room arrangement was not changed. For this purpose, 17 households were investigated to analyze the adaptability of the lifestyle to the improved unit. The dwellers of 20 % are highly-compatible to the improved plan and they inherit the lifestyle of previous house. On the other hand, 70% of dwellers including the persons who have physical depression and disease by aging mainly live in the Japanese-style room on the south part of unit which is near to the equipment and DK. In the latter case, the remarkable tendency is that the utility room and the Japanese-style room on the north side become vacant room or storage. Therefore, the lifestyle of the 70 % residents is less-compatible to the improved plan.

Key Words

Public housing / 2DK / Equipment improvement / Aged households / Lifestyle

1. Introduction

Since Japanese public housing has a large quantity of stock, the correspondences to the rapid aging of households and the reproduction of public housing which became decrepit are now required. Particularly, the public housing stock of 700,000 constructed in the 1970s is very large and the various choices of reproduction should be devised because the level of deterioration and obsolescence is different. In order to respond to the situation, "The general application plan for public housing stock" was established in 2000. Then local governments make a concrete application plan such as rebuilding, improvement and maintenance of every all house ridges. In this plan, the most of public housing constructed in the 1970s are judged to be individually improved. In addition, these houses are entirely improved for aged households.

From this backgrounds, the technique of public housing stock's improvement is required to grappled with the problems of deterioration and obsolescence of house ridge and resident's aging. Especially, there are many stock of 2DK¹ and 3DK¹ that are planed for family. Therefore, it is necessary to change the unit plan for the aged household.

The house ridge which is judged improvement is improved for the aged households now. In the improvement of 2DK and 3DK type unit, only the equipment improvement is done and the repair not changed the room arrangement is the main technique. In these cases, the space of DK is reduced for the bathroom, washing, and lavatory space. Though this improvement technique has enhanced the equipment, it doesn't correspond to the lifestyle of aged households because the unit plan for family is maintained.

In this paper, from the viewpoint of the behavior form, the custom, the DK area, and the room arrangement, the suitability of the lifestyle of aged households is verified.

2. The outline of survey

2.1 Improvement system for the aged in Ube city

The public housing of Ube city in Yamaguchi Prefecture is researched. The management number of public housing (at 2008 year moment) is 3925 units and about 50 % of the whole (2127) was constructed in 1969-1989 and these were selected in the improvement object for aged households. The improvement is executed when the first or second floor room becomes vacant, and the present objects are 613 units.

Fig.1 shows the summary of unit improvement for aged household. The plan is "2DK + utility room" that has the sanitary equipment, DK, and two Japanese-style 6 mat tatami room and utility room. The content of the improvement is shown in Figure 1, the space of DK had been reduced due to the expand of sanitary space.

2.2 The object and method of investigation

The objects for the investigation are 38 households who had removed in 2003-2007. Among these, 17 households were investigated.

The survey items are as follows. (1) The questionnaire about living environment. (2) Sketch of unit plan, furniture arrangement, indoor elevation, size measurement of furniture. (3) Taking pictures. (4) Hearing of lifestyle. The family type of 17 households are as follows, couples(10), single(4), one parent-and-children(1), three generation family(2) and 14 households are aged 60 and over.

3. Description of residents

3.1 The reason of removal

The system of public housing occupation in present Ube city has been constructed of general recruitment by the people lived in non public housing and the mediation system for

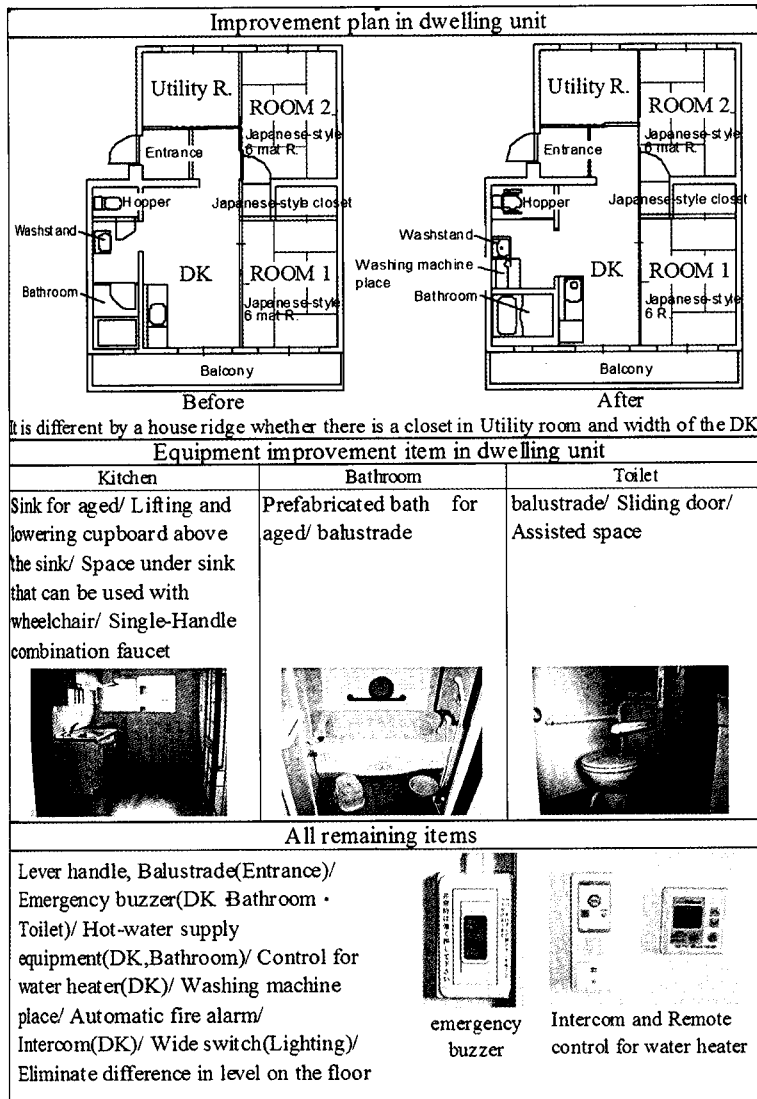


Fig 1. Summary of unit improvement for aged household

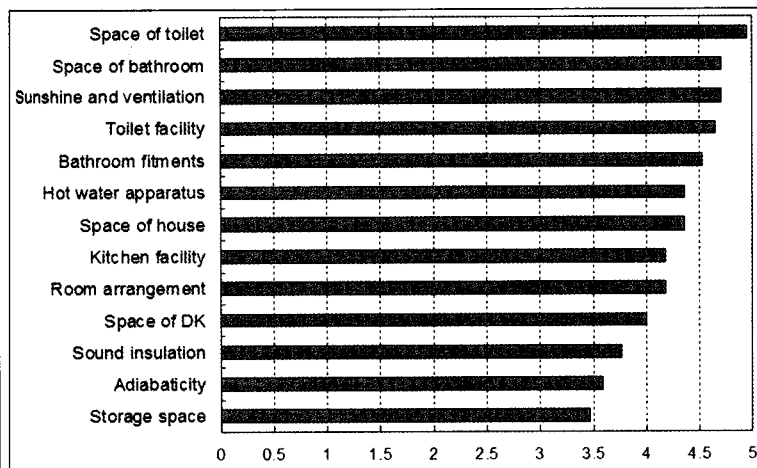


Fig 2. Result of questionnaire

the people lived in public housing. But, it gives priority to the person whose application is early with this system. Therefore, to maintain fairness to the household that has already applied for the recruitment, the recruitment to the improved public housing for the senior citizen is not done. So, 14 households had moved from non public housing by the reason of high rental cost.

3.2 Evaluation of improved dwelling based on the questionnaire

The result of the contents of questionnaire about 13 items, such as room arrangement, housing space, etc. in the improved dwelling unit for aged households is shown in Fig. 2. As the result of giving a score to each item (satisfaction "5", a little satisfaction "4", either "3", a little dissatisfaction "2" and dissatisfaction "1"), all the item's mean exceeded 3.0. Since equipment-related evaluations such as kitchen, bathroom, and toilet are 4.1 or more, the residents are considered to be satisfied to the improved equipments.

4. Analysis of lifestyle

The result of classification of investigated households according to the life act performed in DK and each room is shown in Fig. 3. As a result, lifestyles of residents are roughly classified into three types, "dining and bed room is separated, meal and relaxation are performed in ROOM1" (four cases), "dining and bed room is separated, relaxation and sleep are performed in ROOM1" (eight cases), and "dining and bed room is not separated, meal, relaxation and sleep are performed in ROOM1" (five cases). In the following, the lifestyle of each type is analyzed particularly.

4.1 "dining and bed room is separated, meal and relaxation are performed in ROOM1"

This type of household is comparatively young house, and they perform meal and relaxation in ROOM1, and sleep in ROOM2.

Separation of dining and bed room	Utilization of DK	Utilization of ROOM1	Single	Households more than two people		Sum
				Sharing of bedrooms	Separating of bedrooms	
Dining and bed room is separated	Cooking	Meal, Relaxation & Reception	St S M R Re 1{1} S 3, M4	Ho or St S M R Re 2{1} C 1, M11-F11 C 2, M12-F12	R S M R Re 1{1} B B 1, F11 f31 r11	4{3}
	Cooking & Meal	Reception			R S R S M Re 1(1){1} C 8, M11-F11	
	Cooking & Meal	Relaxation & Sleep	St or V V M R S 2(1){1} S 1, M1 S 2, M2		R S Re or V M R S 2(2){2} C 7, M11-F11 B 1, M12 r11	8(6){7}
	Cooking, Meal, Reception & Sleep	Relaxation & Sleep			V or R S St or R S St R S M R Re M R S M R S 2(1){2} 1(1){1} C 9, M11-F11 C 10, M12-F12 BB 2, F12 f46 r11	
Dining and bed room is not separated	Cooking	Meal, Relaxation, Reception & Sleep	V St M R Re S 1 S 4, M4	St St or V M R Re S 3(1){1} C 3, M11-F11 C 4, M12-F12 C 5, M13-F13	St Re S M R Re S 1 C 6, M11-F11	5(1){1}
Sum			4(1){2}	5(1){2}	8(5){7}	17(7){1}

Note. () is a number of the household which uses a table { } is number of the household which uses a bed
 M:Meal, R:Relaxation, Re:Reception, S:Sleep, St:Storage, V:Vacant, Ho:Hobby

Fig 3. Utilization pattern in each room

The lifestyle before and after moving is shown in Table 1. Three households (S3, C1, 2) have inherited the lifestyle that uses ZATAKU (Japanese-style low foot table) in Japanese-style room near the kitchen. By contrast, the lifestyle of BB1 was changed after moving.

C1 (Fig. 4) used DK only at the time of cooking, performed the meal and relaxation by ZATAKU in ROOM1, and ROOM2 is the bed room. C2 is the same lifestyle as C1. Though,

the lifestyle of S3 (Table 1) is same as C1 and C2, it has shifted to the type of "dining and bed room is separated" due to the increase of room number, and she wished to use the table after moving because of leg joint disease, but ZATAKU is used now like before moving because DK is narrow.

As opposed to the above-mentioned three cases, BB1 has changed to the lifestyle that has meal in ROOM1 using ZATAKU from the

one that performed meal and relaxation in DK using table because DK is narrow.

As mentioned above, 3/4 cases inherited the lifestyle in previous house and the factors which have meal in ROOM1 are the inheritance of YUKAZA³, the intention on tatami and the smallness of DK.

4.2 "dining and bed room is separated, relaxation and sleep are performed in ROOM1"

In this type, all the householders are 65 years old or more, 6/8 households use table in DK, 6/8 households sleep on the bed in ROOM1. In the previous residence, all the households had a meal in DK, and six households had slept on the bed. This type has a strong tendency that they had meal in DK and slept in Japanese-style room near kitchen in previous house, and seven households other than C8 have inherited the same style after moving.

Four households (S1, 2, C7, B1) have only meal in DK. C7 and B1 don't relax together with family because they use ROOM1 and utility room as the private room. In case of C7 (Fig. 4), husband sleeps on the bed all day and has meal at the desk in ROOM1 because he is sick, otherwise wife takes meal on the table in DK and relaxation and sleeping is performed in utility room, and ROOM2 is used as guest room. The case of B1 resembles C7, aged mother (82 years old) performs relaxation and sleeping in ROOM1, and son uses utility room as private room. As well as C7 and B1, S1 and S2 of single household have inherited the lifestyle that they have meal in DK and sleep in ROOM1. However, it is pointed out that utility room and ROOM2 on the north part of unit have become vacant room or storage.

In the next, three households (C9, 10, BB2) perform meal and relaxation in DK because they sleep in ROOM1, so they are dissatisfied the narrowness of DK. In case of C9 (Fig. 4), the aged couple (70 years old and over) have

Separation of dining and bed room	Utilization of DK	Utilization of ROOM1	Family type	Case number	Age	Room arrangement of previous house	Separation type of dining and bed room in previous house	Room of "Meal and relaxation" and behavior form		Room of sleeping and behavior form		Remarks column
								Before moving	After moving	Before moving	After moving	
Dining and bed room is separated	Cooking	Meal, Relaxation & Reception	Single	S3	F64	3K (maisonette)	Non-separation	M and R/Japanese-style R. adjoining the KIT, ZATAKU	M and R/ROOM1, ZATAKU	QUILT	Bed	In the previous house, because going up and down the stairs was difficult, the room of the second floor was not used due to disease of foot joint.
			Couple	C1	M63-F64	3DK	Separation	M/Japanese-style R. adjoining the DK, ZATAKU R/Husband/Hobby R., Wife/Japanese-style R. adjoining the DK	M and R/ROOM1, ZATAKU	Together Bed	Together Bed	The wife is going regularly to hospital due to disease of foot joint.
				C2	M57-F41	3K	Separation	M and R/Japanese-style R. adjoining the KIT, ZATAKU	M and R/ROOM1, ZATAKU	Together QUILT	Together QUILT	The married couple is not working both by convenience on the body.
			Three generation	BB1	F71 m	3DK	Separation	M/DK, Table R/Japanese-style R. adjoining the DK	M and R/ROOM1, ZATAKU	separately Grandma: Bed Daughter and grandchild: QUILT	separately Grandma: Bed Daughter and grandchild: QUILT	Mother and the daughter are healthy.
	Cooking & Meal	Reception	Couple	C8	M63-F64	2DK	Non-separation	M/DK, ZATAKU R/Each R.	M/DK, Table R/Each R.	separately QUILT	separately Husband: QUILT Wife: Bed	Wife's range of the action is narrow due to disease of the waist.
	Cooking & Meal	Relaxation & Sleep	Single	S1	M67	2DK	Separation	M/DK, ZATAKU R/DK	M/DK, ZATAKU R/DK	QUILT	QUILT	Healthy
			S2	M66	3K	Separation	M/DK, Table R/Japanese-style R. adjoining the DK	M/DK, Table R/ROOM1	Bed	Bed	Healthy	
			Couple	C7	M44-F41	2DK-Utility R.	Separation	M/DK, Table R/Each R.	M/DK, Table R/Each R.	separately Husband: Bed Wife: QUILT	separately Husband: Bed Wife: QUILT	The husband is physically handicapped and goes to bed easily all day long.
	Parent-and-children	B1	F12 m	3LDK	Separation	M/DK, Table R/Each R.	M/DK, Table R/Each R.	separately Mother: QUILT Son: Bed	separately Mother: QUILT Son: Bed	Mother and the son are healthy.		
	Cooking, Meal, Relaxation & Reception	Relaxation & Sleep	Couple	C9	M44-F41	2DK	Separation	M/DK, Table R/DK or Each R.	M/DK, Table R/DK or Each R.	separately Husband: FUTON Wife: Bed	separately Bed	The couple is healthy.
C10			M71-F69	4LDK	Separation	M/DK, ZATAKU R/Husband/DK, Wife: Bed R.	M/DK, ZATAKU R/DK and Each bed R.	separately Husband: QUILT Wife: Bed	separately Bed	This resident had resided in a another ridge of the same public housing complex in old times.		
Three generation			BB2	F69 m	3DK	Separation	M/DK, Table R/DK and Each R.	M/DK, Table R/DK and Each R.	separately Grandma: Bed Daughter and grandchild: QUILT	separately Grandma: Bed Daughter and grandchild: QUILT	It resides in the third generation. The grandmother goes to bed easily due to disease.	
Dining and bed room is not separated	Cook	Meal, Relaxation, Reception & Sleep	Single	S4	F67	5DK	Separation	M/Breakfast and lunch: DK, Table, Dinner: Japanese-style R. adjoining the DK R/Japanese-style R. adjoining the DK	M and R/ROOM1, ZATAKU	QUILT	QUILT	It goes regularly to hospital due to disease of foot joint.
			Couple	C3	M44-F69	2DK-Utility R.	Separation	M/DK, Table R/ROOM1	M and R/ROOM1, ZATAKU	Together QUILT	Together QUILT	The previous house was the first floor of another building of the same public housing, and it cohabited with the daughter and the grandchild. Because husband's range of the action was narrow in the disease, "Room 1" near equipment was private room of the couple in the previous house.
			C4	M60-F69	5DK	Separation	M and R/Japanese-style R. adjoining the DK, ZATAKU	M and R/ROOM1, ZATAKU	separately QUILT	separately QUILT	The couple is healthy. Only the wife eats the table breakfast of DK.	
			C5	M63-F69	2DK-Utility R.	Non-separation	M and R/ROOM1, Table	M and R/ROOM1, Table	Together Husband: Bed Wife: QUILT	Together Husband: Bed Wife: QUILT	The husband is physically handicapped and goes to bed easily all day long.	
			C6	M63-F69	3DK	Separation	M/DK, Table, R/DK and Each bed R.	M/ROOM1, ZATAKU, R/Husband ROOM2, Wife: ROOM1	separately QUILT	separately QUILT	The couple is healthy.	

Note. [Pattern] : Item with pattern change before and after moving, M: Meal, R: Relaxation, ZATAKU is Japanese-style table, QUILT: QUILT on the floor (FUTON)

Table 1 Lifestyle of investigated households

inherited the lifestyle that ROOM2 is used as husband's bed room and ROOM1 is wife's one, and meal and relaxation are performed in DK, moreover, utility room is vacant because the previous house was 2DK. Similarly, C10 and BB2 (Table 1) perform meal and relaxation in DK in order to sleep in ROOM1, and both households are dissatisfied the narrowness of DK. Although C10 was using ZATAKU in the previous house, they hoped to use table after moving because of the disease of wife's leg

joint. However, ZATAKU is used now because DK is narrow. BB2 resembles C7, mother (69 years old) sleeps on the bed in ROOM1 all day long by the disease, and BB2 feels inconvenient to the narrowness of DK that the chair of table takes up the passage to toilet or washroom.

As mentioned above, the tendency of taking bed room in ROOM1 that is near the equipment on the south part of unit is remarkable owing to the falling down of

physical condition according to aging or disease, so it is considered that the households have taken meal in DK. And the narrowness of DK is felt dissatisfied by the households who perform relaxation in DK.

In case of single household, they are 60's single and healthy so they have suitable space for meal in DK and bed room in ROOM1, their life acts are completed in DK and ROOM1 on the south part of unit, so they hardly use ROOM2 and utility room on the north part of unit.

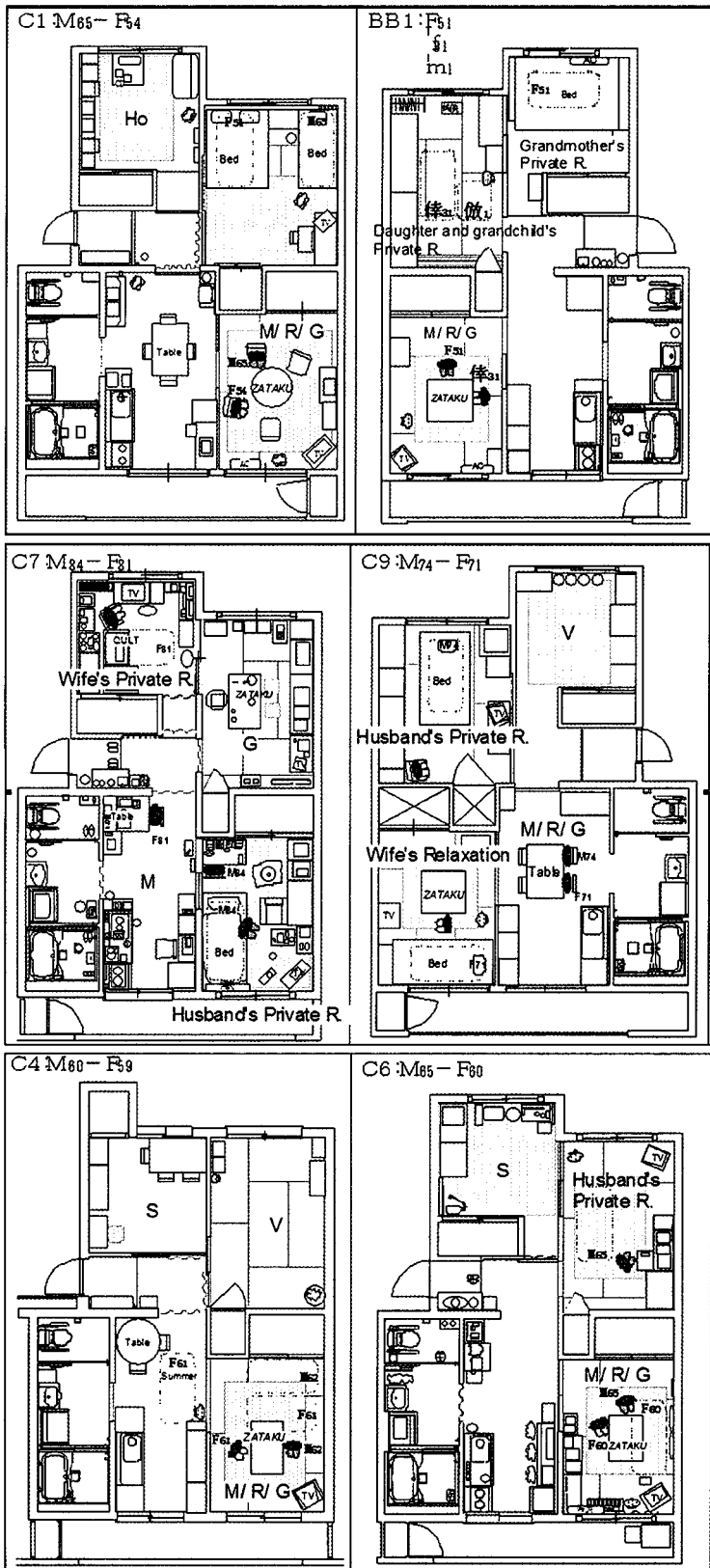


Fig. 4 Case of lifestyle

4.3 "dining and bed room is not separated, meal, relaxation and sleep are performed in ROOM1"

In this type, ROOM1 is used as meal, relaxation, and bed room, and DK is used only at the time of cooking, utility room and ROOM2 are vacant room or storage. Moreover, this type has many households who use quilt on the floor and ZATAKU in ROOM1.

The case of C4 (Fig. 4) had meal on the ZATAKU in ROOM1 and performed sleeping in ROOM2 for a while after moving, and wife used table only for breakfast because DK was narrow. But now ROOM1 has become bed room because humidity of ROOM2 is high in summer and temperature is low in winter. Moreover, utility room has become storage because they have a lot of furniture. In case of S4, the life acts are completed in ROOM1, she hardly uses table in DK because of the smallness of DK, and she has many amounts of furniture, ROOM2 has become storage and utility room has become vacant.

In case of C5, it is similar to C7 and B2, husband sleeps on the bed in ROOM1 all day long because he is disease, and wife puts quilt on the floor by husband's bed side, and two rooms of the north part on unit has become storage because they have a lot of furniture. Similarly, in case of C3, husband has small behavior range owing to the disease, so the life acts are completed in ROOM1. They use ZATAKU and quilt on the floor because of intention of YUKAZA. Moreover, ROOM2 and utility room are vacant because they have few amounts of furniture or load.

As opposed to the above-mentioned four households, C6 is changing to the lifestyle of dining and bed room is not separated which has meal and relaxation in ROOM1 using ZATAKU from the lifestyle of dining and bed room is separated which performs meal in DK using table because DK is narrow, and Husband and wife sleep in the separate room. Moreover, the utility room is storage because

they have many amounts of furniture or load.

As mentioned above, meal, relaxation and sleeping are performed in ROOM1 because of intention of YUKAZA on tatami, quilt on the floor and the smallness of DK, as the result utility room and ROOM2 are hardly used in every day.

5. Conclusions

The results are as follows.

(1)The households (17 cases) of the improved dwelling unit for the aged are such as couple and single aged 60 and over in most. Moreover, the evaluation of the dwelling unit is high, and especially the evaluations of kitchen, bathroom, and toilet are high.

(2)The lifestyle of young and healthy household is the type of "dining and bed room is separated, meal and relaxation are performed in ROOM1", and ROOM2 is used for bed room. The inheritance of intention of YUKAZA on tatami and the narrowness of DK are the factors which do not make use of dining kitchen.

(3)In case of the residents whose physical condition had been fell down according to aging or disease, there is a tendency to use ROOM1 that is close to equipment and on the south part of unit as bed room. Moreover, the household of using bed in sleeping has meal in DK, conversely as for the household of using quilt on the floor performs meal and sleeping in ROOM1. Furthermore, the household who also performs relaxation in DK is dissatisfied with the narrowness of DK.

(4)The life acts of all the single concentrate in DK and ROOM1, and utility room and ROOM2 tend to become vacant room or storage.

As mentioned above, since young and healthy household is the lifestyle that dining and bed room is separated and they use the housing unit effectively, so it is considered that their lifestyle is highly-compatible to the improved plan.

However, it is pointed out that the household whose physical condition had been fell down according to aging or disease is less-compatible to the plan. Their life act concentrate in ROOM1 because of the unit plan which has equipment and Japanese-style 6 mat tatami room on the south part of unit. On the other hand, there are some households who have meal in DK in order to make a bed sleeping in ROOM1, though the narrowness of DK is dissatisfied. And the tendency that ROOM2 and utility room on the north side become storage or vacant room is recognized.

Therefore, the technique applied to the improvement of the housing unit 2DK is less-compatible for the lifestyle of aged household, and it seems that this improvement plan needs to be reexamined.

Notes

*1 2DK or 3DK is two or three rooms and eat-in kitchen type of housing unit.

*2 The item which has un-answering reduced and calculated the number of un-answering.

*3 The meaning of YUKAZA is a Japanese-style behavior form which uses a ZATAKU.

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