Research on the Countermeasure of Housing for the Elderly in the Aging Background of Japan — A Case study on typical Welfare Facilities of Kitakyushu City in Japan

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Abstract

After the war, with the economy recovered, the changing of population structure in Japan is immense. Because of the low birth rate and the average age of old people continually augment, Japan soon had entered into the aging society period. Aging speed is faster than most of the European countries. And Japanese society had influenced by the arises problems, especially the housing problem. The functional performance of building needs to consider more about old peoples' safety, comfort and convenience. And also should consider about their psychological problem. In this paper, first I’m going to present an overview of the Japanese people’s living problems under the aging society. And then I will describe some case studies of housing for elderly now in Kitakyushu City of Japan, including the countermeasure about planning details, caring system and the relevant policies.

Keywords: Housing for Elderly; Aging; Service; Space constitution

1. Background

Since 2005, Japan has become the world’s oldest rate of the country. According to the statistics of the Ministry of Statistics Japan, until September 2015 Japan's aging population will expected to reach 31.86 million people, accounting for 25.0% of the proportion of the total population (JMIAC, 2010). The number and proportion of the...
Aged population will become the highest value in the past. This means that one of the 4 people in Japan is over 65 years old. Fig. 1 shows the aging population changing from the year 1950 to 2015, and the forecast to the year 2035. The dotted line is the aging proportion of the total population. The aging increment speed is evident.

![Fig. 1. The development of the number of elderly people and the proportion.](image)

Over 65 years old elders could be divided into the Early Stage (65~74 years old) and the Later Stage (over 75 years old). The most elder who at the Early Stage are relatively healthy, and just retired from working life, and having relaxing and comfortable life with the pension(Meno Fumitake, J., 2012). But with the aging and being senile, the possibility of having health problem will get higher and higher, which is Later Stage's problematic. Fig. 2. Shows the evolve of Early Stage and Later Stage. For now the number of Early Stage is still lesser than Later Stage, but obviously, soon the situation is going to be reversed.

![Fig. 2. Evolve of different types of household.](image)

According to the statistical result of 2008 "Housing and Estate", which is a census about Japanese housing and living conditions by Statistics Japan, shows that the number of normal household with over 65 years old elders is 36.6% of the total. Which means every 2.7 households have one household with elders. The households with single elder are 41.39 million, and there are 51.41 million households with the elder couple (both are elder or each one), other types household with elders are 89.62 million. Most of the elders are living with their families, but recent years the household of elder couple and single elder are increasing. Fig. 3. Shows the changing in 25 years. Compared to the total number of the household with elder increased 2.1 times from the year 1983, the household of single elder increased 4.2 times(Kawamura, J. 2014).

The aging problem is becoming very serious in Japan. The aging speed of Japan also faster than any other developed country right now. With the Later Stage's number exceed the Early Stage, the productive aging population is getting reduced, the whole society structure of Japan will be a huge change. And with the mode of Japanese family
caring changing, the household of single elder's increasing also bring a lot of pressure on the society. How to give these elder a better later years is a huge project.

Against this massive change, to support elders' later years' life need both the "hardware" and the "software". The hardware is about to provide convenience residence for elders, the software is about supporting their daily life. Japan is working real hard on both residence side and the welfare facilities side. Along the "hardware" side, for providing the ensure of the comfortable living environment, there is a "residence service" which can provide new residence or remodel the old residences to make it more convenient for elders to hold out. Along the "software" side, for helping lower physical status' elders, there is "nursing service" which is backed up by the nursing care insurance (also called long-term care insurance). With the Later Stage's population increased in Japan most of families choose the welfare facilities to take care of the elders. Therefore, study and explore the design of welfare facility is today's big project in Japan.

In this paper, by investigating one of the largest welfare facilities In Kitakyushu, to find out how to use welfare facilities to provide ensure of elders' later life, and the specific contents of the existing welfare facilities, as well as how the design of the facility consider for the elders. And also discuss the advantages and disadvantages of the design.

2. Research of the Object

2.1. Kitakyushu City

Kitakyushu located in the northerly part of Japan, the area of 488.78 square kms, it is Japan's major industrial city and port city. Kitakyushu has 1.12 million population, among them over 65 years old elder has more than 0.3 million people, the advanced age rate is 27.5%. Over 75 years old elder are over 0. 15 million people. The Late Stage rate is 13.6%. In the designated city of Japan, Kitakyushu's rate of the elderly is the highest. The population of Kitakyushu is expected to go down to 0.8 million by 2025 (City of Kitakyushu, 2010). With the rise of birth rate declining, the aging rate is proceeding to reach to 30%. Then, 75 years old and over elder will account for more than 18%. And the aging rate of women and the population growth of over 75 years old elder is more substantial. Thus, how to prepare for facing such a heavy population of Kitakyushu is an important topic.

2.2. Site

The object of the research is located on the site of a comprehensive development. Then entire site is about 18,000 m², and constituted by 8 different facilities, include an elder welfare facility, a city elderly resident, an outside square, a ward office, a child care center, a disabled activity center the place that cultivates the disabled people's self-care ability, a city rental apartment and a private-sector apartment. Among the elder welfare facility is the research object (see Fig.4.). The entire site was developed by the government, at the beginning government didn't have enough money to build the whole facilities, so they sold to few developers to build apartments (Private-sector and rental apartment), then they use the money to build other welfare facilities. People who are living in those apartments can use the facilities more convenient. And from the site in 200m scope there are 8 bus stations the closest one is only 110m away, and the closest train station is 1000m away.

The whole object is made up of three blocks, and the three blocks are connected with the corridor. The outside middle garden connects the external space of three blocks together, and has been connected to the Outside Square in the west. There is a ramp which can go wheelchair go through the garden to the Outside Square. And people also can get to the 2nd flower of the west side building by the ramp. It's very convenient.

2.3. Project

The project includes 5 main forms of facilities, which are so called "Day Service Center", "Group Home", "Short Stay", "Special Nursing Home" and "Care House" (see Fig.5.). And also have Day Service Center and Helper Station. And the facilities provide 3 main forms of service. Nursing Service, which the care plan based on aimed at each
person's abilities, provide entire daily life service, including showering, eating, excretion and so on. With daily rehabilitation and recreation to maintain each elder's abilities. Health management service, through cooperation with external medical organizations, to give elderly checkups and professional guidance, and the nurse management the daily health. Eating service, each meal's nutrition is managed by nutritionist, and catering according to each elderly's situation.

On the first and second flower of north side building set up with the office and parking lot and the kitchen, from 3rd to 6th flower is the Care House. The 1st and 2nd flower of south side building is Group Home, 3nd to 6th flower is the Special Nursing Home (unit A). The 1st flower of the east side building is Day Service, the 2nd flower is used for meeting room and staff room. From 3nd to 5th flower is Special Nursing Home (unit B), the 6th flower is same as 3rd to 5th, but it's Short Stay (see Fig.6. and Fig.7.).
On each floor, each area is connected to another, so that can make people easy to move. But the nurses and staffs of each facility only work in the corresponding area (except Special Nursing Home and Short Stay). Each facility can accommodate the different number of elderly people and the required level is also different (see Table 1.). The table also showed the average daily number of health care workers. Below will introduce 5 major facilities.

<table>
<thead>
<tr>
<th></th>
<th>Group Home</th>
<th>Short Stay</th>
<th>Special Nursing Home</th>
<th>Care House</th>
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3. Plan Study About Flow Planning and Space Design of Each Section

3.1. Day service center

Day service is a one-day service for elderly people. The service starts from 8:30 am to 6:30 pm, and also provide bus to pick up the elders.

Day service using a one big open space to provide two functions for elders, which are training and dining. There is also a resting space and a Japanese tea room and a shared bathroom (see Fig.8.).
The entire space is decorated with warm color, that make people feel more comfortable and peaceful. Get into the entrance, on the right side is washing space, where elders can wash hands or face. The vanity top has 3 sinks, each one is 1m wide and 0.7m high from the floor, that can comfortably be used by the wheelchair users. On the left side is staff center and resting space where elders can sit and watch TV. The training and dining space is about 156m², and be distinguished by few long tables. Elders can train their skills on the table, like playing cards or drawing. When lunch time it becomes their dining table. The big open space makes people easier to communicate with each other. And with the side wall with big windows on it makes the entire space more light and comfortable. Another advantage about use the open space here is, it’s easy for staffs can see all the elders.

3.2. Group home

The service of Group home is facing to the elders who have Alzheimer’s disease. Group home is planed at the 1st and 2nd floor, each floor has 9 bedrooms and one bathroom, the living room and staff room are in the middle. In the staff room there is a spiral stairs lead to the 1st floor to make two spaces connected, that’s easy to manage. The entire inside space is decorated like a home as much as possible that can make elders fell like living in their own house. Especially the entrance space is just like a normal Japanese house’s (see Fig.9.). From the wall to the floor are all in warm color, that make people more comfortable. Each elder has their own room with a toilet and a vanity top inside. All doors are sliding door with no door jamb on the floor. The balcony outside the bedrooms are all connected, and it connects to the fire escape too. In case to prevent elders go outside by themselves, there’s a camera on the ceiling near the entrance, and also the entrance door can’t be opened unless pushed the button that covered on the side.

3.3. Special nursing home and short stay

Special nursing home is facing to elders who are drumble and lower self-care ability. More than half of the elder in here can’t having meal by themselves. Same staffs taking care of both Special nursing home and the Short Stay. The Special nursing home is separated into two units, A unit and B unit (see Fig.10.). On each floor, the two units which are highlighted by the dotted line are connected, and in the connection space is planed a bathroom. The connection space make it easy for management, only two staffs will be able to take care of one floor’s elder. Each unit has 10 bedrooms. And each bedroom has a toilet and a vanity top inside. In each unit’s center has a light well and a communication living space. The living place can help elders communicate with each other. By planning the bedroom outside, the inside space becomes a darkroom, but the light well helped the living space could get enough light from outside, and also bring more fresh air into the space (see Fig.11.).
3.4. Care house

Care house provides service to the elder who comparatively have self-care ability. Care house includes from 3rd floor to the 6th floor in one block. Each floor of Care house has 10 bedrooms with a bathroom and toilet in it (Fig. 12.).
The bedrooms are set at the north and west side into an "L" shape. The common living room is planned at the corner in south side. Each side of on the outside of each bedroom has a balcony, but only on the west side the balcony is connected to a fire escape. The inside also decorated in warm color, make elder feel more comfortable. The elder who is living here can bring their own small furnitures like shelf, chair or sofa. By that to let elders feel the facility is more like a home.

4. Analysis

By the field investigates, the research analyzed space design, flow planning, layout and some details of the object.

4.1. Flow planning analysis

From the flow planning analysis, we could see the whole design of each space in the plane is connected (see Fig.13.). This way the mobile will be very easy, more conducive to the management. Each area has a staff center, which is arranged in the middle of each area, so that for the staffs, it's convenient to take care of each elder, and can reach their room as soon as possible. But during the night, the staff will be reduced, according to the needs of each facility is different, the number of staff needed in each facility is not the same. For example, the elderly who living in the Care House are healthier and higher self-care ability, so at night only need one staff. But the Care House set up in the same block on the 3~6 floor, so once at night while there are more than two elderly people need to care, through the elevator to go up and down is very inconvenient for one staff. On the other side, the Special Nursing Home need 4 staffs during the night, as the two units are all in the same layer so one staff can easily take care of one floor. As can be seen, in the design of the same facility should try to put all the regions in the same layer plane, make it easy to manage and care.

4.2. Space design analysis

Because of natural contact with the outside world is very important for the elderly, the project's external space
and internal space have a very natural combination. Including the ramp from the inner garden to the outside square, the old people in the facility can have the opportunity to move to the outside conveniently. And the corridor between the two blocks which on east and west are used the bulk of the glass, it could let people from inside can enjoy the scenery, the project on the eastern side of the two individual blocks also adds the light wells, but also a very good combination of internal and external space.

4.3. **Layout analysis**

The entire layout of the object is set according to the characteristics of each facility and the situation of the elderly. Day service, because elders come and leave everyday, people are moved frequently, so set in the first floor. The Group Home which facility is caring the elders who have Alzheimer’s disease, is set in the 1st and 2nd floor. In the special nursing home also, the elders from strong to weak be arranged on the different floor from top to bottom. Except the Care house, in other facilities' plan, living area are all set in the middle of each space, so that the benefits of the elderly can have more opportunities to communicate with each other. The windows of Common living area also try to choose the southern side, to ensure that there is enough light to enter, so that the internal space is bright (see Fig.13.). The Special Nursing Home chooses the wrap around arrangement to plan the bedrooms, the purpose is let every room has a relatively good day lighting, on the other hand the center space inside becomes a dark room, but through set a light well solves the lighting and ventilation problems.

But during the investigation, observed compared to other facilities in the Care house more old people choose to stay in their own rooms in most of the time, one reason is because the location of the common living area is deviated from the center, arranged in the corner on the south side. From the plane can notice that northern side's bedroom are far from the living area, and the corridor in front of the bedroom is also the reason why the elderly are reluctant to go out. So the space outside the bedroom is better an open space, it won't give the elderly the sense of oppression, and also easier for elderly come out of their own room and communicate with each other.

4.4. **Other detail analysis**

By interviewed to the elderly who are staying at the object knew that, because most of the elderly prefer the worm and peaceful environment, and also prefer the space belong to their own's, which are a lot of old people choosing stay at home but not to the welfare facilities. By this reason the object chooses a warm color to decorate the inside space, and make it feel more like a home.

5. **Conclusions**

With the aging of Japan, people's lifestyle is changing, the pension mode is constantly changing too. The design of the welfare facility also needs to meet the needs of modern elderly, and to give them a comfortable life in the later years. Through this investigation, learned the trend of the aging of Japan, the welfare system and types of facility. And through the specific project investigation and interview to understand the, flow planning must be clear and concise, and need to keep each area connected. In order to facilitate the convenience of facilities management should plan the same type of facilities in the same layer. Open space should be used reasonable, common living room should be arranged in the center location of the facility, and to keep the space in front of the bedroom open, to make the elderly feel more comfortable. By the investigation knew that, at present all facilities are full state. And there are more than 100 people who have been waiting for access to different facilities of the object. From this it appears that there are a lot of old people in need of care in Kitakyushu, and many can not enter the similar welfare facilities. So it is an urgent task to find the solution to the problem of aging, and builds more construction of welfare facilities, let the elderly have better later years for the elderly to live a comfortable life in old age. This study has just
started and a lot of data need to be collected. By visiting more home facilities in the future, and make a questionnaire to find better ways to design for the elderly and to find out the problems that exist, and solve them.

References

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