

Prediction of Veterans Care Demand and Supply System for Veterans

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Abstract

The rapid aging of the veterans has reached a level that cannot handle the demand for veterans care through the existing veterans care infrastructure. Therefore, it is urgent to improve the quality of the overall service of veterans due to the deterioration of the quality of nursing services for veterans with various underlying diseases compared to general patients and the long-term waiting for admission to the veterans care center. In this situation, about 640,000 people are admitted to veterans care institutions, but only about 5% of them can enter the veterans care center smoothly. As of June 2020, the number of people waiting to enter the veterans care center exceeds 1,000, including 520 at Suwon Veterans Nursing Home, 1 at Gwangju Veterans Nursing Home, 47 at Gimhae Veterans Nursing Home, 39 at Daegu Veterans Nursing Home, 86 at Namyangju Veterans Nursing Home.. Therefore, in order to predict those who want to enter the Veterans Nursing Home and wait for admission, and to find an important basis for resolving the long-term atmosphere, the ratio of future care providers is predicted in 2022-2050 and 2022-2024 to establish a cooperative system.

As a result, 6,988 people in 2022, 6,797 people in 2023, and 6,606 people in 2024 can be admitted when 'preferred linkage', and 12,057 people in 2022 when 'expanded linkage'. It was found that 11,837 people in 2023 and 11,618 people in 2024 could be admitted. This was derived by estimating the percentage of people who wish to enter the Veterans Nursing Home when linking private nursing homes, and eventually "additional acceptance" of 22.5% in 2022, 20.9% in 2023, 19.4% in 2024, and 38.8% in 2023, 36.3% in 2023, and 34.1% in 2024 are most efficiently available.

Keywords: Veterans, veterans care services, demand forecasting, expansion linkage, priority linkage

1. Introduction

Recently, as the demand for veterans care has soared due to the increase in the number of veterans benefits, the number of veterans who want to enter the veterans care center is increasing rapidly. Those who are admitted to veterans care institutions are those who have senile diseases among those aged 65 or older and those under the age of 65 who are judged to be grades 1 to 5 or cognitive support under the Elderly Long-Term Insurance Act and meet the living standards set by the Minister of Veterans Affairs. In this case, as of 2019, 609,710 of

the total veterans and 234,060 of the bereaved families were included, of which a total of 639,145 were eligible for veterans care, including 513,606 of them and 125,539 of them. However, as of June 2020, the number of people waiting to enter the Veterans Nursing Home exceeded 1,000 in the metropolitan area, including 520 at Suwon Veterans Nursing Home, 1 at Gwangju Veterans Nursing Home, 47 at Gimhae Veterans Nursing Home, 39 at Daegu Veterans Nursing Home, 86 at Daejeon Veterans Nursing Home, and 482 at Namyangju Veterans Nursing Home. [1-3].

2. Reviews of Previous Research

The Ministry of Patriots and Veterans Affairs (2009) presented examples to maximize the efficiency of veterans' nursing home operation by connecting the three types of veterans' nursing home, state-run nursing home, and community nursing home.

Ha Tae-yeon (2006) introduces a discussion on the Ilford Polish Home under the Veterans Settlement Act enacted in 1947, such as managing veterans care services and providing customized services according to the physical condition of veterans. [4-5].

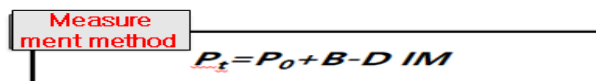
The Veterans Education Institute (2012) suggested the possibility and limitations of providing veterans care services using private infrastructure by designating suitable public and private nursing facilities by introducing the La Chartre de Bleuet de France since November 1999. [6-8].

3. Method

The study focuses on establishing a long-term cooperation system with private nursing homes to improve the long-term demand system by predicting the acceptance ratio of private nursing homes' spare beds and private nursing homes. First of all, by applying the "2022-2050 Veterans Care Projection Data", "2022-2024 Long-term Care Grade Recognition Rate", "2022-2024 Veterans Over 65", and "The Future Strategy Office of the Korea Veterans Health Service, 2013" to estimate the demand for veterans' care.

According to the population balance equation, population fluctuations are caused by changes in population change factors such as births, deaths, and migrations. . In particular, in the population balance equation, P_t is the last population, P_0 is the first population, B is birth, D is death, and IM is international migration. the total population increases. Therefore, the 'period from 2022 to 2050' was estimated based on the data on the status of veterans by gender, age, individual, and bereaved family at the end of '2011-2018'. In addition, in order to estimate the demand for hospital beds in veterans' nursing homes by region in 2050, the number of veterans' nursing care recipients by region was predicted from 2022 to 2050.

Figure 2 shows 'Estimate the population of veterans in accordance with the "population balance method"'.



Measurement method

$$P_t = P_0 + B - D + IM$$

Figure 1. Population estimation model for veterans 「Population balance method」

In particular, the population evaluation model applied an estimation formula that applied 'the number of veterans and medical care recipients by region', 'the ratio of veterans aged 65 and over' at 77.2%, and the 'long-term care insurance recognition rate' at 9.6%. [9-10].

Figure 2 shows ‘How to review the Analysis method of Current Status and Estimation Results of Long-Term Care Class Recognition Rate’.

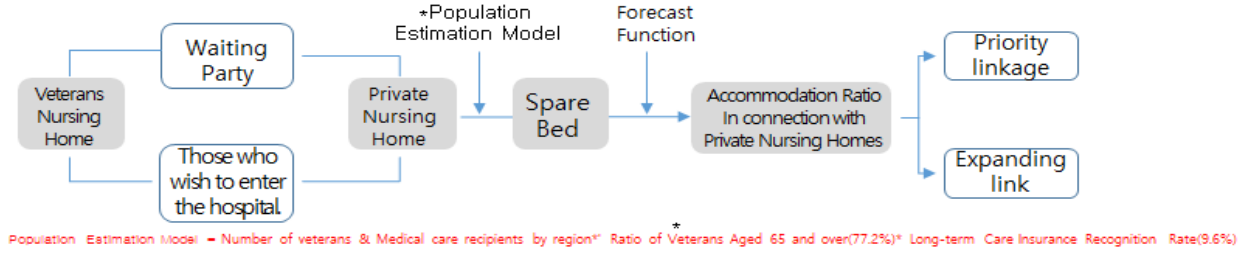


Figure 2. Research Design

4. Results

4.1 Current Status and Estimation Results of Long-Term Care Class Recognition Rate

As a result of applying the "Forecast function" to the "2015-2019 long-term care grade result", it was found that the recognition rate of long-term care grade increased by 3.1% from 9.6% in 2019 to 12.7% in 2024..

Table 1 shows ‘Current Status and Estimation Results of Long-Term Care Class Recognition Rate ’.

Table 1. Current Status and Estimation Results of Long-Term Care Class Recognition Rate

Sortation	Current situation					Prediction				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Long-term care grade recognition rate (%)	7.0%	7.5%	8.0%	8.8%	9.6%	10.1%	10.8%	11.4%	12.1%	12.7%

4.2 Analysis of the estimation results of those who wish to enter the Veterans Nursing Home and those who enter the Veterans Nursing Home

As a result of the estimation of applicants for admission, the number of people wishing to enter the Veterans Nursing Home is expected to increase, and 34,068 people are expected to be in demand in 2024..

Figure 3 shows ‘Those who wish to enter the veterans' care unit.’.

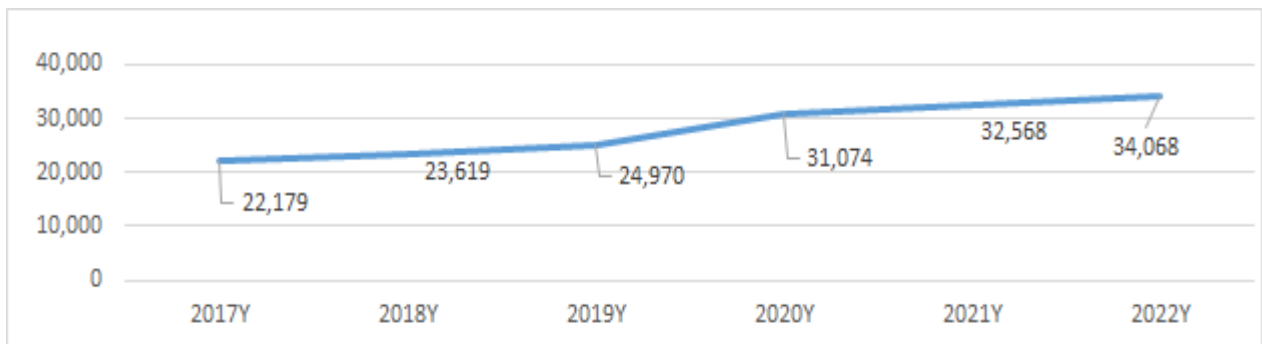


Figure 3. Those who wish to enter the veterans' care unit

4.3 Estimated results of the residents of the Veterans Nursing Home

In order to predict "2022-2024 Veterans and Waiting for Admission" in order to predict "2022-2024 Veterans and Waiting for Admission", the "2022-2024 Veterans of Veterans Nursing Home" was predicted by applying the "Forecast function" to the "2015-2019 Veterans Nursing Home" value. As a result, Suwon Veterans Nursing Home is expected to have the largest number of residents with 95 in 2024, while Daegu Veterans Nursing Home is expected to have the lowest number with 17.

Table 2 shows 'Estimated results of the residents of the Veterans Nursing Home '.

Table 2. Estimated results of the residents of the Veterans Nursing Home

Sortation	Current situation					Prediction				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Suwon	84	73	92	99	78	89	91	92	94	95
Gwangju	127	71	84	86	76	63	54	45	37	28
Gimhae	90	57	84	83	75	77	76	76	75	75
Daegu	131	89	92	100	69	62	51	40	28	17
Daejeon	156	140	129	129	111	103	93	83	72	62
Namyangju.	309	81	82	73	61	57	50	43	36	29

4.4 Prediction of Inpatients and Waiting Persons in Veterans Nursing Home

By applying the "average ratio of six veterans and waiters in 2017-2019" to the "Veteran Nursing Home Inpatients and Waiters Estimation Results", the number of residents and waiters in the 2022-2024 Veterans Nursing Home continues to increase, with 1,304 residents and waiters in the metropolitan area are expected to occur in 2024.

Table 3 shows 'Prediction of Inpatients and Waiting Persons in Veterans Nursing Home '.

Table 3. Prediction of Inpatients and Waiting Persons in Veterans Nursing Home

Sortation	Current situation				Prediction		
	2017Y	2018Y	2019Y	Average(3Y)	2022Y	2023Y	2024Y
Suwon	356	436	528	33%	577	604	632
Gwangju	84	89	83	6%	113	118	124
Gimhae	112	91	102	8%	134	141	147
Daegu	96	101	80	7%	122	128	134
Daejeon	145	173	159	12%	210	220	230
Namyangju	482	433	478	35%	613	642	672

4.5 Prediction of Spare Beds in Private Nursing Homes

By applying the Forecast function in the 2015-2019 Private Nursing Home Value, the area adjacent to the veterans' nursing home was viewed as a "priority link," and the area not contacted was indicated as an "expansion link." In the Ministry of Health and Welfare's "Status of Welfare Facilities for the Elderly", implications were derived by comparing the admission capacity of the elderly care facility with the spare beds excluding admission.

Table 4 shows 'Prediction of Spare Beds in Private Nursing Homes'.

Table 4. Estimated results of the residents of the Veterans Nursing Home

Sortation		Current situation					Prediction		
		2015Y	2016Y	2017Y	2018Y	2019Y	2022Y	2023Y	2024Y
Suwon	Priority linkage	1,651	1,555	1,354	1,190	1,294	869	761	654
	Expanding link	2,748	2,591	2,357	2,030	2,688	2,142	2,074	2,007
Gwangju	Priority linkage	613	575	656	578	564	550	540	531
	Expanding link	710	661	752	680	601	581	561	542
Gimhae	Priority linkage	646	688	562	558	517	400	361	323
	Expanding link	1,525	1,727	1,756	1,557	1,402	1,385	1,343	1,303
Daegu	Priority linkage	321	331	277	199	248	136	108	81
	Expanding link	928	834	982	636	558	319	225	131
Daejeon	Priority linkage	422	487	465	431	479	486	492	497
	Expanding link	905	921	954	859	814	769	744	720
Namyangju	Priority linkage	1,845	1,718	1,876	2,113	2,158	2,453	2,555	2,657
	Expanding link	2,797	2,858	2,980	2,718	3,272	3,330	3,411	3,492
TOTAL	Priority linkage	6,806	6,832	6,492	5,949	6,293	5,520	5,329	5,138
	Expanding link	11,889	12,296	12,024	10,570	11,654	10,586	10,396	10,149

5. Discussions and Conclusion

If the basic purpose of this study was to find the number of people who can be admitted when linking the remaining beds of the Veterans Nursing Home and the spare beds of the private nursing home, separately, which areas will be linked and expanded first is an important part of establishing a practical accommodation system. Therefore, if 'preferred linkage' is applied, 6,988 people in 2022, 6,797 people in 2023, and 6,606 people in 2024 can be additionally admitted, and 12,057 people in 2022 when 'expanded linkage'. It was found that 11,837 people in 2023 and 11,618 people in 2024 could be admitted.

As predicted and analyzed above, this is derived by estimating the rate of admission to a private nursing home from the predicted value of those who wish to enter the Veterans Nursing Home. In the end, 22.5% in 2022, 20.9% in 2023, and 19.4% in 2024 can be "additionally accommodated" in 2022 and 38.8% in 2023, 36.3% in

2023, and 34.1% in 2024 can be used most efficiently. However, if a more multilayered approach is premised based on a wide range of data and variables such as gender, underlying disease, region, and mortality for more advanced and precise research, it is expected that more advanced results will be obtained through accurate prediction of veterans care demand.

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