Long-term and nursing care provided in Japan to elderly patients in acute care facilities

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抄録：日本の急性期病院に入院している高齢患者に提供されていた看護業務を調査し、その提供時間と発生率が最も高い看護業務を特定し、この内容と患者の特性との関連性を検討した。

　これまでも看護師の適正な配置を検討するために、看護提供時間と患者が必要とする看護師の人数との間の関連性を検討するための多数の研究が行われてきたが十分な成果は示されていない。

　本研究では、10ヵ所の急性期病院で看護師が提供していたケアの内容とその時間、および入院患者の疾患等の状態を調査し、高齢患者と、その他の患者に提供されていたケアの違いを明らかにした。

　看護師は高齢患者の増加に伴い、不足する介護サービスを提供しなければならず、このため医療サービスの効率性を低下させてしまっている。このような日本の急性期病棟における入院実態については、抜本的に見直す必要がある。

キーワード：看護、看護時間、急性期病院、高齢患者

1．Introduction

Japan's financial situation, which has become increasingly harsh because of the worsening global economy, is beginning to have a major effect on the system of medical treatment fees used in the national insurance system. Until recently, the Japanese government used to consider the medical system as a "sacred ground". Therefore, despite a drop in tax revenues throughout the 1990 s, the government continued to allocate more and more resources to the medical treatments it deemed necessary [1].

To keep providing high-quality medical care in an ageing society, it is important to use medical resources in an efficient and effective manner through a sustainable medical insurance system. However, since the nineties this goal became harder to reach due to the deterioration of economic conditions.

In this context, Japan the need argued through the "Final draft for a reformed Social security and tax system" (in 2011, June 30) to specialize and strengthen hospital functions, to enhance cooperation (for example by devoting more medical resources to acute care) and to promote efficient home care.

This coincides with the revision of the medical and long-term care fee system (January 2012). The revision promotes a community-based integrated care system that uses the

resources already existing in the community to cover the growing medical and long-term care needs of the population. This system was designed to provide seamless long-term and medical care by enhancing collaboration between those two fields.

Acute care hospitals are among the most expensive care facilities in Japan and most of the costs incurred by the elderly patients admitted to these hospitals are borne by the taxpayers. This lack of other financial sources is a major factor contributing to the deterioration of the medical insurance system in Japan.

An amendment to the National Long-Term Care Insurance Act of 2006 terminated the government's support for the skilled nursing care units attached to acute care hospitals. The amendment was made on the assumption that new rules would dictate the provision of health care services to the elderly population and their admission to long-term care facilities [2].

Various methods were developed to obtain more accurate staffing projection and to classify patient according to their care needs [3-8]. For example, a patient classification system known as the patient acuity system has been developed to manage nursing workloads. This system identifies and quantifies patient care needs to estimate the number of required staff for each patient. In the Scandinavian countries, a new system has been built to integrate the patient classification system with nursing activity studies, which could become an optimal and efficient tool for nursing staff management [9-10].

In Japan, more than sixty percent of patients are over 65 years of age, which suggest that nurses are currently spending quite some time on providing convalescent care, including preparation of meals, assistance with elimination and assistance with clothing. This means that nurses and their expertise may not be used to their full potential.

In this research, we used a one-minute time study method to acquire data on the amount of time spent by nurses to provide care and on the types of nursing care activities provided to elderly patients in acute care facilities in Japan. In addition, we investigated how patients' characteristics influence nursing care time and nursing care activities through a statistical analysis. This study reveals what kind of nursing services is provided to which patients and how much time is spent on providing those services.

2．Method

In Japan, few studies focus on the relationship between the age groups of patients admitted to acute care facilities and the types of nursing care services provided to them. Therefore, we conducted alternate-format one-minute time study surveys of nurses in 10 acute care facilities. The average ratio of nurses to patients was one to seven in those facilities.

The survey results and the data on patients' characteristics were used to compare the clinical conditions of elderly patients (65 years of age or older) with the conditions of other patients (under 65) and to evaluate the amount and types of nursing care provided to them.

1）Data on patients' characteristics and medical conditions

Nurses and other specialists involved in providing nursing care in clinical facilities were

asked to fill in a questionnaire about patients' attributes, and to collect data on their medical condition. The nurses interviewed 524 patients and collected information on 183 items considered suitable for specifying patients' medical condition.

2) Data on nursing care activities

The delivery of nursing care was surveyed through a one-minute time study wherein the activities of each nurse were monitored by another nurse over a 24-hour period. A nurse would record, minute by minute, the types of care that the target nurse provided to different types of patients.

3) Codification and Quantification of nursing care activities

The data on nursing care activities obtained through the one-minute time study were then converted into codes using an original nursing care codification method developed by Tsutsui. More precisely, 389 types of nursing activities were classified according to the following six categories: personal care (190 codes); Specialized nursing (medication and treatment and other) (77 codes); Tasks related to rehabilitation (functional training) (72 codes); Care system management (contact, report, meeting etc.) (32 codes); Home-care related (18 codes); Care related to services for children (10 codes).

4) Analysis method

We employed the Kruskal-Wallis test to compare the conditions of elderly patients (65 years of age and older) with the conditions of patients under 65. Moreover, we used two-tailed t-tests (p < 0.01) to examine the differences between the two groups in terms of time spent to perform the nursing care activities described by the various care codes.

3 . Results

1) Characteristics of patients admitted to acute care facilities
Patient attributes

The age of patients -246 males (47.1%) and 278 females (52.9%)- ranged from zero (infants) to 94 years with an average age of 55.2 years. More than half of the patients (55.2%) were aged 65 or older.

Up to the day of the survey, the average length of stay in the hospital was 40.8 days. Seven patients were surveyed on the day they were admitted, and the longest stay of the surveyed patients was 3,790 days. While 70% had been in the hospital for 21 days or less, only 9% had been in the hospital for more than 100 days and these were all elderly patients. Moreover, 221 (42.3%) patients were in the hospital for surgery and 23 of them were surveyed on the day of their surgery. However, the elderly patients did not differ significantly from other patients in terms of types of diseases and in terms of medical procedure.

Specificity of elderly patients' condition

　　　Comparing the differences between the two groups (elderly patients and patients under 65) in terms of medical condition, we found significant differences with regard to 34 of the items. The characteristics specific to elderly patients are summarized below.

(a) A higher rate of use of diapers and portable toilets, lower degree of independence in excretory activities, and a tendency toward a higher rate of excretory disabilities such as urination problems, urinary abnormalities, and urinary tract infections

(b) A tendency to have a lower degree of independence in tasks requiring mobility (e.g., rolling over in bed, standing up, maintaining a sitting posture, and moving to and from transport aids, i.e., moving from a bed to a wheelchair or from a bed to a gurney or stretcher), with significantly fewer patients able to walk independently and significantly more patients using wheelchairs and walking aids

(c) Significantly fewer patients able to independently carry out personal care activities (e.g. cleaning false teeth, washing hair, and trimming nails)

(d) A significantly lower degree of independence in changing clothes

(e) A significantly lower degree of independence in bathing activities such as body washing activities and getting in and out of bathtubs

(f) A tendency to show changes in eating habits, such as loss of appetite or overeating

(g) Poor hearing, inhibiting communication abilities

(h) Forgetfulness and a high rate of problematic behavior such as an inability to handle fire safely

(i) Difficulties in falling asleep and a tendency to wake up during the night

(j) The appearance of pressure sores and other skin abnormalities requiring treatment and a higher rate of use of oxygen-breathing apparatus

Items (a) through (f) indicate a low level of independence in daily life activities, item (g) is commonly found in elderly patients and item (h) is commonly associated to senile dementia. Item (j) is directly related to the treatments carried out by nurses, and items (a)-(h) are, generally speaking, directly related to the amount of assistance that elderly patients require.

2) Specificity of the nursing care provided to elderly patients

Time spent on nursing care

　　　Figure 1 shows the percentage of time devoted by nurses to a specific category of activity according to the age group of the patient. For example, it seems that in the case of elderly patients, the largest portion of nursing time was devoted to personal care (41.4% against 34.0% for patients under 65), while in the case of patients under 65, the largest fraction of nursing time was devoted to care system management (41.6% against 36.6% for elderly patients).

　　　We conducted another analyze (summarized in Table 1) to further examine the differences in time spend on care activities between the two age groups. Table 1 shows only the 39 items with a siginifcant difference between the two groups. This table clearly shows that the time spend on each of the 39 nursing care activities listed was significantly longer for the elderly patients. In addition, three other types of activities referred to as "Treatments" (which includes

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specialized nursing care) required substantial amounts of time for elderly patients. Those three activities were: "distributing medications to patients", "preparation for and cleanup after taking specimens" and "washing hands and changing disinfectants". Two other items requiring a considerable amount of time ("case meetings" and "instruction as part of training within the hospital or facility") were activities related to the "care system management" category.

Most frequent nursing activities

Table 2 is a list of the 10 most frequently provided nursing care in the care of elderly patients and patients under 65 (in descending order of the average time spent to care for elderly patients per day). Although the order varies slightly between the two groups, the nature of the 10 most frequent activities is identical.

The only significant difference that was revealed in this analyses concerns "aspiration, preparation of aspiration devices etc.", which was only provided frequently (even though not frequently enough to appear on the top 10 list) to the elderly patients' group.

4．Discussion

In Japan, nurses working in acute care facilities believe that they spend more time delivering nursing care to elderly patients than they do for patients in other age groups. However, few studies have conducted objective data analyses while taking into consideration the medical condition of elderly patients in acute care facilities in Japan or the nursing time required for such patients. This is because Japan lags far behind other countries in terms of empirical research in the nursing field.

Therefore, we conducted a detailed comparison between the patient profiles of the two patient groups (elderly patients and patients under 65 years of age) and analyzed the time required to perform specific nursing care activities according to each group. We found a statistically significant difference between the two groups in terms of degree of independence in daily life activities. The elderly patients also showed a particularly low degree of independence in tasks involving excretory activities, moving to and from transport aids, grooming, changing clothes and bathing. Elderly patients were also found to have a high rate of skin abnormalities and other conditions that were most likely caused by being bedridden. In addition to suffering more from hearing problems (resulting in inhibited communication abilities) than younger patients, we found that elderly patients were more frequently exhibiting problematic behaviors such as forgetfulness and to unstable emotional states. Another characteristic of the profile of elderly patients was that a large percentage used oxygen-breathing apparatuses and required high-level medical care.

Analyzing nursing times, we found that a significantly longer time was spent in providing care to the elderly patients than to the patients under the age of 65. We also found that with elderly patients, more time was spent in activities involving hygiene or other personal care, and a particularly long time was spent on activities involving excretory activities and mobility. One reason for this could be that elderly patients require more nursing care time for

assistance in tasks requiring mobility because they are likely to have difficulties in moving to their transport aids.

Furthermore, since elderly patients who experience difficulty in moving to and from transport aids generally need someone to support their torso, it can be assumed that they will require assistance in many other aspects of their daily life, for example, with changing clothes, grooming themselves, eating, and bathing. In addition, since the elderly patients tended to have poor hearing, additional nursing time was required to overcome their difficulty in understanding nurses' instructions and their intent. Elderly patients were also found to have a high rate of complications due to problematic behavior and interruptions in nighttime sleep.

We also found that in acute care facilities, the most time-consuming activities were those involving the recording of notes. That is, nurses tended to spend more time on activities to maintain nursing systems -for example, keeping records- than on providing patients with lifestyle and emotional support. This has contributed to the decreasing quality of life of elderly patients.

This is an indication that, in acute care facilities, activities involving hygiene and other personal care are performed in combination with medical treatments and other high-level forms of nursing care. Furthermore, in many cases, these various forms of care have to be provided simultaneously. For example, a nurse administrating medicines to an elderly patient must also consider possible hearing and understanding instruction problems. Moreover, the patient may require various types of assistance simply to move to the examination room for medical tests or check-ups. It has also been pointed out that on any given day, the patients conditions and the nursing care intensity in acute care contexts are more variable than those in long-term care contexts[12]. Nurses are well aware of this situation, because based on their own experience, providing nursing care to elderly patients requires more time than providing the same nursing care to other patients.

Elderly patients require, in addition to high-level medical care and treatment, more rehabilitation-related care than other patients. In acute care facilities, even though the proportion of elderly patients exceeds 50%, the system used to provide nursing care is still a traditional system designed for specific treatments and medical types of care. A new approach suggests that "Nursing cannot be defined within the context of medical models comprising the diagnosis and treatment of illnesses"[13]. It seems logical to think that appropriate nursing services need to be specific to the conditions and characteristics of patients, and thus should not be ruled entirely by the medical models.

In Japan, the "fee-for-service" model has been used in the insurance payment system for acute medical care. Furthermore, acute care hospitals administrators have found the subsidies that they receive for providing medical services to elderly patients to be a stable source of income. For this reason, hospitals have eagerly accepted elderly patients. However, nurses who provide specific medical care to elderly patients also have to provide long-term care services. It is the absence of distinction between those two types of services that has significantly decreased the efficiency of the current medical services in Japan.

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As the results of this research have made clear, the delivery of nursing services in acute care facilities is not efficient enough in Japan. One of the factors contributing to the high cost of elderly patients in acute care facilities in Japan is the comparatively high working cost of nursing services that have to compensate for the relatively low level of autonomy of elderly patients in daily life activities. There is little doubt that this plays an important role in the recent difficulties to sustain the insurance system of Japan.

Moreover, we will face major problems trying to find a sufficient number of new nurses to provide long-term care for elderly patients, who occupy over 60% of the in-patient beds of acute care facilities.

As mentioned before, the revision of the medical fee system recognizes the need to provide high quality care in a sustainable medical insurance. This revision is an attempt to ensure people with a safe place to take care of each other until death occurs, provide in-home care, provide medical care within a community, and differentiate acute care, post acute care and chronic care.

This explains why the revision focuses on "providing high-quality medical care through the differentiation of medical functionalities and through the promotion of collaboration". This also suggests that specialized care workers should provide the support of daily life activities (meals, elimination, clothing…) of elderly patients in acute care hospitals and that it should be possible to improve care efficiency if integration is sufficiently developed[14].

It seems necessary to investigate the possibility of designing a customized system to manage specialized nursing care and other care services such as the type of long-term care needed by elderly patients.

Thus, it seems that Japan's medical insurance system will be unable to continue to function effectively without further fundamental reforms of its medical care system.

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Figure 1. Percentage of time devoted by nurses to a specific category of activity according to the patients' age category
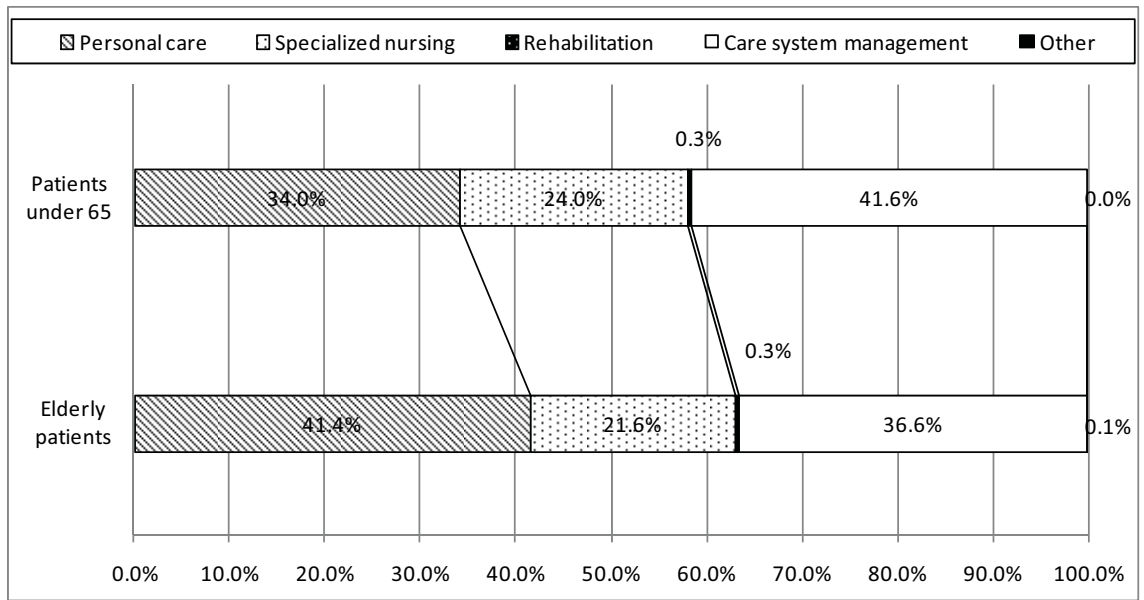
Table 1. Activities with a significant difference in time spent on performing them according to the patient's age category

		Average	
		Patients under 65	Elderly patients
Mobility assistance	Provide arch support or cushioning using a pillow; prevent sacral bedsores using a special device etc.	6.2	20.1
	After helping patient to get up, help the patient the patient to walk or move to wheelchair, lay down from side sitting, or lie	12.0	31.4
	Operate adjustable bed	20.3	37.0
	Help patient get in or out of bed	0.2	4.0
	Help patient from bed to wheelchair	17.0	34.2
	Help patient from wheelchair to bed	14.3	27.6
	Operate, prepare and put away wheelchair; rearrange beds in hospital rooms	31.0	62.0
	Monitor while in wheelchair	4.0	12.4
	Assist while in wheelchair; prepare and put away ramp (for going out)	69.7	118.4
Excretory activities	Help patient from wheelchair to toilet	1.2	7.3
	Help patient from bed to portable toilet	3.4	16.5
	Help patient from toilet to wheelchair and from wheelchair to portable toilet	3.0	11.4
	Help patient to urinate	15.4	35.2
	Clean up after urinating	6.3	17.1
	Dispose of urine collection devices	11.2	22.4
	Prepare and dispose of portable toilets	7.0	23.5
	Monitor during bowel movements	1.0	4.5
	Portable toilet preparation and clean-up	2.3	7.0
	Remove and change diapers	45.4	82.6
	Inspect diapers	11.4	21.4
	Dispose of diapers	9.2	24.1
Bathing	Wipe body parts	19.0	38.7
	Wash genital and anal area (hip bath)	16.2	45.0
	Prepare necessary items	24.3	47.0
	Partially assist changing clothes (including socks and shoes) and change clothes while going to bathroom	22.4	48.0
	Prepare clothes	10.1	24.0
Meals	Prepare meals (apron, tea, hot water and serving) and confirm the number of tray tags after serving	132.1	190.1
	Cleanup after eating; take away trays; clean up after serving tea	33.4	66.7
	Prepare drinks	13.2	24.1
Communication	(Nighttime) inspection and status observation	71.8	98.7
	Ascertain patients' need and complaints by talking with patients	297.4	380.4
	Respond to nurse calls	58.1	110.5
	Movement due to calls by patients	8.7	21.5
	Adjustment light- and sound-proofing; open and close blinds and curtains; turn on and off lights and TV; change TV channels	11.4	22.6
Treatments	Hand out drugs to patients; administer oral drugs and confirm; assist administration; and inject drugs into liquid food	91.3	121.5
	Prepare samples and clean up afterwards	42.3	67.8
	Change hand washing and antiseptic solutions	18.6	31.6
Other	Hold case meetings and conferences; care planning and individual care planning; confirm CARDEX and slips (including periodic and mini conferences)	607.4	750.1
	Hospital/facility training; provide guidance to (new) staff, interns and volunteers	7.5	32.6

Table 2. Nursing care activities with highest occurrence rates in both age categories

	Elderly patients		Patients under 65	
	Average time per day (seconds)	Rate of occurrence (%)	Average time per day (seconds)	Rate of occurrence (%)
1 CARDEX, nurses reports, ect.	1521.1	100	1458.8	99.6
2 Case meetings	750.1	98.7	607.4	98.2
3 Contacting other staff	700.2	96.0	650.6	92.0
4 Observation and measurement of brain and nervous system	583.3	94.2	506.6	90.1
5 Passing on information	454.8	89.1	437.8	93.0
6 Learning needs and complaints	380.4	88.5	297.4	80.3
7 Preparing IV, IVH, etc.	240.1	51.1	230.2	54.0
8 Filling in and organizing admittance charts, etc.	231.6	83.1	221.6	87.9
9 Receiving instructions from doctors	224.5	72.0	201.5	73.0
10 Adjusting IV or IVH drips, ect.	186.3	41.4	194.2	45.2

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Abstract: We observed the care activities provided by nurses to elderly patients in acute care facilities in Japan to determine the most frequent and time-consuming activities and to study the possible relationships between the nature of those activities and the patients' characteristics.

Many studies have tried, with little success, to investigate the relationship between nursing care time and the number of nurses required for a patient with a given clinical condition because this information helps hospital to manage and allocate workload.

We conducted a survey in 10 acute care facilities to examine the nature of care provided, the time necessary to provide this care and the condition of patients in these facilities according to whether the patients is an eldery person or not.

Along with the increase of the elderly population, nurses have to spend more time on providing long-term care services. This has led to a significant decline efficiency regarding the provision of medical services, urging the need to implement a system more appropriate to the curent situation.