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End-of-life care bonus promoting end-of-life care in nursing homes: An 11-year retrospective longitudinal prefecture-wide study in Japan

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Summary **The end-of-life (EOL) care bonus introduced by the Japanese government works as a financial incentive and framework of quality preservation, including advance care planning, for EOL care among nursing home residents. This study aims to clarify the effects of the EOL care bonus in promoting EOL care in nursing homes. A longitudinal observational study using a questionnaire was conducted. We invited 378 nursing homes in Kanagawa prefecture in Japan, a region with a rapidly aging population, to participate in the study. The outcome was the number of residents dying in nursing homes from 2004 to 2014. In a linear mixed model, fixed-effect factors included year established, unit care, regional elderly population rate and hospital beds, adjacent affiliated hospital, full-time physician on site, physician's support during off-time, basic EOL care policy, usage of the EOL care bonus, EOL care conference, and staff experience of EOL care. A total of 237 nursing home facilities responded (62.7%). The linear mixed model showed that the availability of the EOL care bonus (coefficient 3.1, 95 % CI 0.67-5.51, $p = 0.012$) and years of usage of the EOL care bonus ($p < 0.001$) were significantly associated with increased numbers of residents dying in nursing homes. Our analysis revealed that the EOL care bonus has the potential to increase the number of residents receiving EOL care in nursing homes over several years. EOL care conferences, physician support for emergency care during off-time, and the presence of an adjacent affiliated hospital may also increase the number of residents receiving EOL care in nursing homes. These results suggest that a government financial incentive may contribute to effective EOL care among nursing home residents in other developed countries with rapidly aging populations.**

Keywords: End-of-life care, nursing home, end-of-life care bonus, Japan, advance care planning, financial incentive

1. Introduction

In aging societies, end-of-life (EOL) care is an important issue, especially in nursing home settings (*1*). A nursing home is internationally defined as a facility with a domestic-style environment that provides 24-hour functional support for frail elderly residents who require assistance due to losing capacity and having complex health needs, including dementia (*2,3*). Due to the aging populations in many developed countries, the demand for nursing home care is increasing. However, nursing home residents in Japan, the United States, the United Kingdom, and many other developed countries are transferred involuntarily to a hospital at their EOL, against their living wills (*4-11*). In a Japanese nationwide study in 2006, among nursing home residents who were dying, fewer residents were dying in nursing homes (30.9%) compared with residents who were dying in a hospital (43.8%) (*12*).

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Based on the fact that many residents were dying in hospitals against their wishes, taking into account the quality and quantity of EOL care in Japanese nursing homes, the EOL care bonus was established in 2006 (*13,14*). The primary role of the bonus is as a financial incentive from the Japanese government. A bonus payment is made per diem consisting of 800 Yen ($7US) between 29 to 3 days before the date of death, 6,800 Yen ($62) 2 to 1 days before the date of death, and 12,800 Yen ($116) on the date of death. The bonus can be retrospectively billed for 30 days up to a total of 48,000 Yen ($436) per resident by the government to the facility (*13*). The secondary role of the bonus is as a framework for quality preservation, for EOL care in nursing homes. Facilities must meet the following five eligibility criteria (*13*) to receive the bonus: employing a full-time registered nurse onsite, having a 24-hour call system for nurses, having a basic policy for EOL care that needs to be explained to residents and/or their families on admission, organizing training courses on EOL for the staff, and having an individual room for EOL care. In addition, residents must also meet the following three criteria: diagnosed with an incurable condition by a physician, have an EOL care planning provision in place with consent from the resident or the resident's family, and an explanation of, and the family's consent to EOL care must have been given/acquired for the duration of care (*13*).

A previous study in Japan showed that facility characteristics that are related to dying in nursing homes, included policies of providing EOL care, physicians being based in home care supporting clinics, and location in a region with more nursing home beds or fewer hospital beds (*15,16*). In other literature, the EOL care bonus by the Japanese government had been just introduced (*17,18*); however, there have been no studies concerning how the EOL care bonus has affected the promotion of EOL care in nursing homes. If it is revealed that the bonus by the Japanese government promotes EOL care in nursing homes, it may contribute to effective EOL care in nursing homes in other developed countries with a rapidly aging population. Therefore, the present study was conducted to identify whether the EOL care bonus promotes EOL care in nursing homes, by using retrospective longitudinal data.

2. Materials and Methods

2.1. *Setting and subjects*

Data were collected from the Kanagawa prefecture: a region with a population of 9 million, an elderly population rate of 21.5% in 2012 (*19*), and is estimated to have the highest increase in elderly population rate over the next 20 years (*20*). All of the residents of 378 nursing homes in Kanagawa prefecture were included, based on the Long-term Care Insurance Services Informational Publication System (*21*) as of November 2015. We requested the cooperation of directors of the Health and Welfare Departments in Yokohama city, Kawasaki city, Yokosuka city, and Sagamihara city, Kanagawa prefecture.

2.2. *Measures and questionnaire*

We conducted a pilot survey in order to draft an appropriate questionnaire for the main prefecture-wide survey. The pilot survey was conducted in August 2014 and included visits to two nursing homes and a questionnaire for the managers of 14 nursing homes. Based on the pilot survey, we mailed the revised questionnaire to the managers of all 378 nursing homes, divided five times for each jurisdictional area in the prefecture. The questionnaires were distributed between November 2015 and January 2016. After repeated requests by fax and phone in less responsive areas, the completed questionnaires were returned to our research office by the beginning of May 2016.

The questionnaire was based on a previous study (*15*) and gathered information relating to the number of residents who were discharged and the characteristics of the facility, such as staffing and the nature of EOL care. Residents who were discharged during the 11 fiscal years from 2004 to 2014, were divided into three discharge categories: due to death, transferred to a hospital, or other reasons. Those residents, due to death and residents dying in a nursing home were categorized as receiving EOL care in a nursing home.

2.3. *Ethical considerations*

The study was approved by the institutional review boards of the university (No. A140522015, approved on 24th July 2014). Nursing home facilities' consent was implied by the return of the questionnaires.

2.4. *Statistical analysis*

A multi-level analysis was conducted using a linear mixed-effects model. The dependent variable was the number of EOL care residents dying per 100 beds in a nursing home. Fixed-effect factors included the year the facility was established, adoption of unit care, the elderly population rate in the region of the facility, number of hospital beds in the region of the facility, the presence of an adjacent affiliated hospital, the presence of a full-time physician on site, physician's support during off-time, basic policy for EOL care, usage of the EOL care bonus, conferences for EOL care, nurses' experience of EOL care, and caregivers' experience of EOL care (Table 1). The year established was compared by dividing it into before and after the introduction of the EOL care bonus in 2006. Adoption of unit care required the facility to have all single rooms with a common living and

Table 1. Facility characteristics of nursing homes

Items	Total (n = 237)
Outline of facility	
Year established	
Before 2005	154 (65.0 %)
After 2006	80 (33.8 %)
Unknown	3 (1.3 %)
Unit care	
Yes	104 (43.9 %)
No	131 (55.3 %)
Unknown	2 (0.8 %)
Individual room (median, IQR)*	23, 4 - 88
Yes	207 (87.3 %)
No	26 (11.0 %)
Unknown	4 (1.7 %)
Region of facility	
Elderly population rate (median, IQR)	19.6, 17.2 - 22.3 %
Number of hospital beds per 10 million population (median, IQR)	766, 746 - 857
Adjacent affiliated hospital	
Yes	12 (5.1 %)
No	223 (94.1 %)
Unknown	2 (0.8 %)
Staffing	
Full-time physician on site	
Yes	14 (5.9 %)
No	221 (93.2 %)
Unknown	2 (0.8 %)
Physician's support for emergency care during off-time	
Only support by calling	119 (50.2 %)
No support	67 (28.3 %)
Full-time support	49 (20.7 %)
Unknown	2 (0.8 %)
Full-time nurse on site* (mean ± SD)	3.3 ± 1.5
Yes	231 (97.5 %)
No	1 (0.4 %)
Unknown	5 (2.1 %)
EOL care	
Basic policy for EOL care (on 2015)	
Providing EOL care in the nursing home	154 (65.0 %)
Transfer to a hospital	57 (24.1 %)
No explicit policy	24 (10.1 %)
Unknown	2 (0.8 %)
Usage of EOL care bonus (on 2015)	
Yes	143 (60.3 %)
To be prepared	38 (16.0 %)
No	55 (23.2 %)
Unknown	1 (0.4 %)
Preference documented*	
Yes	162 (68.4 %)
No	57 (24.1 %)
Unknown	18 (7.6 %)
Explanation of EOL care on nursing home admission*	
Yes	189 (79.7 %)
Yes, but not always	22 (9.3 %)
No	20 (8.4 %)
Unknown	6 (2.5 %)
Training course of EOL care*	
Yes	208 (87.8 %)
No	28 (11.8 %)
Unknown	1 (0.4 %)
Conference for EOL care (in 2015)	
Yes	157 (66.2 %)
No	63 (26.6 %)
Unknown	17 (7.2 %)
Nurses' experience of EOL care	
No	40 (16.9 %)
1-4 times	27 (11.4 %)
≥ 5 times	159 (67.1 %)
Unknown	11 (46.4 %)
Caregivers' experience of EOL care	
No	38 (16.0 %)
1-4 times	61 (25.7 %)
≥ 5 times	125 (52.7 %)
Unknown	13 (5.5 %)

End-of-life care bonus includes the factors marked *. EOL: end-of-life; IQR: interquartile range; SD: standard deviation.

dining room per 10 beds. It is desirable that the EOL care conference includes the physician, nurse, caregiver, care manager, social worker, resident (if possible), and resident's family. For every area in a prefecture, the elderly population rate and number of hospital beds were calculated in every fiscal year using local government data (*22,23*). The basic policy, usage of the EOL care bonus, and usage of the conferences for EOL care were additionally examined for every year measured. Because the facility criteria of the EOL care bonus included the presence of individual rooms, the presence of a full-time nurse on site, documentation of the resident or family preference for EOL care, an explanation of EOL care on nursing home admission, and an EOL training course, these factors were excluded from the multi-level analysis. All data analyses were performed using the SPSS software version J21 (IBM, Tokyo, Japan). A p value of < 0.05 was considered statistically significant for all analyses.

3. Results

Among all 378 nursing home facilities in the prefecture, 237 facilities (62.7%) responded by mail, fax, or email. However, the remaining 141 facilities (37.3%) did not return the questionnaire. Among residents who were discharged during the 11 fiscal years from 2004 to 2014, the death group increased annually from 68.4% to 71.9%, the transferal to hospital group decreased annually from 28.7% to 24.6%, and the other reasons group had an unremarkable change of about 3.0%.

3.1.1. *Facility characteristics*

The national government subsidized 230 facilities (97.0%), 5 (2.1%) facilities were subsidized by the local government, and the funding status of 2 (0.8%) facilities was unknown. Many facilities were established around 2006 upon the initiation of the EOL care bonus (median, interquartile range [IQR]: 2002, 1992-2008). The mean number of beds was 89.2 (standard deviation [SD]: 34.6). Individual rooms were adopted by 237 (87.3%) nursing homes and the median was 30 (IQR: 8-98) rooms.

3.1.2. *Region of facility*

Based on Kanagawa prefecture government data, we conducted a descriptive analysis that revealed the regional characteristics of all local municipalities. At the municipal level, there were large differences in elderly population rates ranging from 12.9% to 26.0% in 2004 (*22*). During the 11-year period, rates in all local municipalities increased (mean, SD: 1.5, 0.2 times), and ultimately reached from 19% to 37.4% in 2014. However, the number of hospital beds in all local municipalities did not obviously increase (mean, SD: 1.0, 0.2 times) (*23*).

3.1.3. *Staffing*

The mean number of caregiver staff was 48.5 (SD: 20.3) persons, and the mean number of full-time caregivers on site was 33.5 (SD: 14.9) persons. The mean number of nursing staff was 6.4 (SD: 2.5) persons, and the number of full-time nurses on site was 3.3 (SD: 1.5) persons. One hundred ninety-three facilities (81.4%) were on call during the night. Physicians in 111 (46.8%) facilities worked once every week.

3.2. *EOL care*

Most facilities provided EOL care in the nursing home (65.0%) and used the EOL care bonus (60.3%) (Table 1). Regarding the EOL care policy if a patient or the family wanted the patient to die at the nursing home, there were 201 (84.8%) acceptable facilities, 9 (3.8%) were acceptable only with family cooperation, and 26 (11.0%) facilities were not acceptable.

3.3. *Trends for residents dying in nursing homes*

During the period from the initiation of the EOL care bonus in 2006 until 2014, the mean annual number of residents receiving EOL care in nursing homes increased at a rate that was proportional to the progressive increase in the annual mean usage rates of the EOL care bonus (Figure 1). However, there were differences in each fiscal year between the number of residents dying in nursing homes and the number of residents who adopted the EOL care bonus (Figure 1). In addition, among the dying residents, the ratio of residents who died in a hospital progressively decreased from 2004 to 2014 (Figure 2). However, the ratio of residents who died in nursing homes progressively increased and the predominant

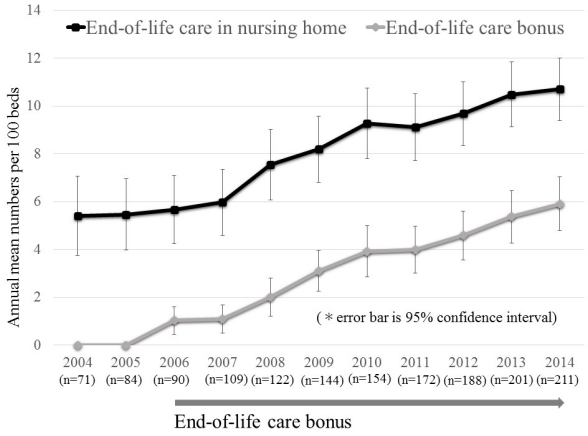

Figure 1. Trends of end-of-life care in nursing homes. The trends are presented for the facilities that reported the number of residents dying in nursing homes and the number of residents who adopted the EOL care bonus. The numbers of residents per 100 beds progressively increased from the initiation of the EOL care bonus in 2006.

location where the resident died switched from hospitals to nursing homes after the initiation of the EOL care bonus.

3.4. *The effect of the EOL care bonus in the linear mixed model*

The linear mixed model showed that the availability of the EOL care bonus (coefficient 3.1, 95% confidence interval [CI] 0.67-5.51, $p = 0.012$) and the years of usage of the EOL care bonus (each coefficient in Table 2, $p < 0.001$) were significant factors associated with increasing numbers of residents dying in nursing homes (Table 2). During the years of usage of the bonus, the coefficients increased yearly for 6 years from the onset of usage of the bonus (Table 2).

In the fixed-effect factors, apart from EOL care bonus availability and years of usage, presence of an adjacent affiliated hospital (coefficient 3.2, 95% CI 0.12-6.26, $p < 0.001$), full-time physician support for emergency care during off-time (coefficient 5.4, 95% CI 2.76-8.05, $p < 0.001$), and EOL care conferences (coefficient 2.0, 95% CI 1.00-3.01, $p < 0.001$) were significant factors associated with increasing numbers of residents dying in nursing homes (Table 2).

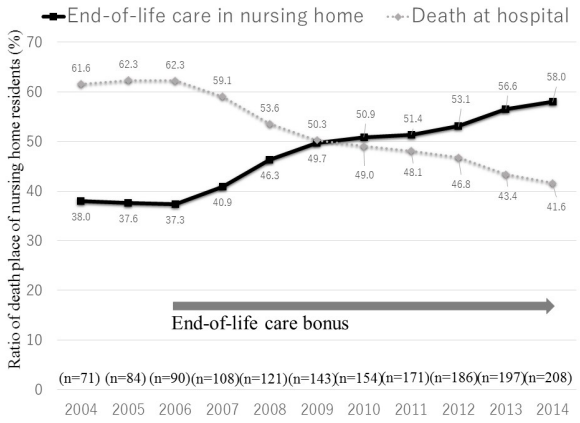

Figure 2. Ratio of number of deaths in nursing homes and hospitals after the initiation of the end-of-life care bonus. This figure presents the trends for the facilities that reported both the numbers of residents dying in nursing homes and in hospitals. The ratio of the residents dying in nursing homes increased and showed an inversion phenomenon compared with those dying in hospitals.

4. Discussion

4.1. *Summary and interpretation of the findings*

In the results of the trends in Figure 1, the number of residents receiving EOL care in nursing homes had progressively increased after the initiation of the EOL care bonus. However, because one-third of the nursing homes in the area were established recently, as described in Table 1, this might have affected the increase in the number of residents receiving EOL care in nursing homes. Additionally, the results of the ratio of death place of nursing home residents suggests that provision of EOL

Table 2. Results of multi-level mixed-effects linear regression

Items	Coefficient	95 % CI	*p* value
Time			0.104
Outline of facility			
Year established before 2006	2.4	(- 0.50-5.38)	0.103
Unit care	- 0.5	(- 3.12-2.12)	0.705
Region of facility			
Elderly population rate >75th quartile	0.6	(- 1.17-2.44)	0.225
Number of hospital beds per 10 million population >75th quartile	1.2	(- 0.79-3.28)	0.386
Adjacent to affiliated hospital	3.2	(0.12-6.26)	0.042*
Staffing			
Full time physician on site	0.2	(- 3.71-4.08)	0.926
Full time physician support for emergency care during off-time	5.4	(2.76-8.05)	< 0.001*
EOL care			
Basic policy of providing EOL care in nursing home	0.2	(- 1.29-1.77)	0.76
Availability of EOL care bonus	3.1	(0.67-5.51)	0.012*
Years of usage of EOL care bonus (year)			< 0.001*
0			
1	- 0.5	(- 2.93-1.88)	
2	0.9	(- 1.67-3.38)	
3	1.4	(- 1.15-3.93)	
4	2.0	(- 0.58-4.67)	
5	3.5	(0.84-6.19)	
6	4.6	(1.80-7.34)	
7	3.4	(0.42-6.34)	
8	5.9	(2.74-9.00)	
9	3.0	(- 0.24-6.27)	
Conference for end-of-life care	2.0	(1.00-3.01)	< 0.001*
Nurses' experience of EOL care ≥5 times	1.9	(- 0.58-4.34)	0.128
Caregivers' experience of EOL care ≥5 times	0.1	(- 2.43-2.70)	0.075

The mixed-effects model analysis included all the factors except for EOL bonus criteria in Table 1. EOL: end-of-life.

care in nursing homes progressively increased compared to those transferred and deaths in a hospital from 2004 to 2014 (Figure 2). Both results of trends showed that not only did the numbers increase, but the ratio of residents receiving EOL care in nursing homes also increased after the initiation of the EOL care bonus.

The results of the linear mixed model showed that both the availability of the EOL care bonus and the number of years the EOL care bonus had been used were significant factors associated with increasing numbers of residents receiving EOL care in nursing homes. Over the 6-year period that the EOL care bonus was used, numbers of residents receiving EOL care in nursing homes experienced a consecutive year-on-year increase. In addition, EOL care conferences, physician support for emergency care during off-time, and the presence of an adjacent affiliated hospital were also significant factors associated with numbers of residents receiving EOL care in nursing homes.

Therefore, our analysis revealed that the EOL care bonus has the potential to increase the number of residents receiving EOL care in nursing homes over several years. EOL care conferences, physician support for emergency care during off-time, and the presence of an adjacent affiliated hospital may also increase the number of residents receiving EOL care in nursing homes.

4.2. *Comparison with other studies*

Due to the cooperation of the local government's directors, the questionnaire response rate (62.7%) was higher than what would be expected, compared with a general survey study; thus, the study has high internal validity. In addition, this prefecture was the region with the most rapid increase in the elderly population rate (*20*), and with the lowest number of hospital beds in Japan (*24*). Therefore, the role of nursing homes in the region is important for EOL care in frail elderly people. Furthermore, the results can help provide comprehensive EOL care in regions with rapidly aging populations.

In the present study, only the presence of an adjacent affiliated hospital was consistent with the findings of previous studies (*15,16,25,26*). These studies showed that facility determinants of dying in nursing homes were the existence of a basic policy for EOL care, a physician based in a home care supporting clinic, location in a rural region, being adjacent to an affiliated hospital, being government-owned, location in regions with more nursing home beds, and location in regions with fewer hospital beds. However, EOL care in nursing homes was not associated with other factors in multi-levels analysis (Table 2) or in crude models (data not shown). Our study analyzed facility factors associated with the number of EOL care residents in their facilities. Thus, the study design did not assess resident factors known to be associated with EOL care in nursing homes, including having an end-stage disease, not having pneumonia as the cause of death, the process of decision-making in their EOL (defined as "advance care planning") among residents or the family, ethnicity, race, lower activities of daily living, lower cognitive status, older age, and full-time physician support (*15,24,27-30*). To the best of our knowledge, there have been no original articles about the EOL care bonus by a national government. Therefore, this study was the first multi-level analysis using a linear mixed model about the effects of an EOL care bonus by a national government.

4.3. *Possible reasons related to EOL care in nursing homes by the EOL care bonus*

According to us, the reason for increasing numbers of residents receiving EOL care in nursing homes was reflected by the two roles of the EOL care bonus: financial incentive and framework for quality preservation. The financial incentive by government might be attractive for nursing home managers. We speculated that assuring the framework for quality preservation of EOL care due to eligibility criteria of the bonus might make the implementation of EOL care in nursing homes easier, which could not have been achieved before the availability of the EOL care bonus.

The eligibility criteria for the bonus include the process of decision-making during EOL, defined as advance care planning (ACP), as one of the factors preserving the quality of EOL care in nursing homes. Since most elderly people who require a discussion about their EOL care have insufficient ability to make decisions (*31*), ACP is important (*32-36*). In nursing home settings, it is also effective in fulfilling residents' wishes for their EOL care and avoiding undesired medical treatment (*11,37*); however, ACP had been not widespread among nursing homes in developed countries including Japan (*11,38,39*). Therefore, we speculate that assuring the framework for quality preservation, including ACP, by the bonus might contribute to increasing the number of residents receiving EOL care in nursing homes.

4.4. *Areas for future research*

Based on the present study, we propose three future research areas. First, it is valuable to clarify the two roles of the EOL care bonus, *i.e.*, financial incentive and framework for quality preservation including ACP, as having an effect on EOL care in nursing homes, as speculated above. Second, if the quality preservation by the bonus will contribute to increasing the number of residents receiving EOL care in nursing homes, a study is needed to assess the outcomes regarding satisfaction of the resident or their families with the EOL care bonus. Third, we propose other nationwide prospective studies demonstrate how an EOL care bonus contributes

to reducing undesired transfers to hospitals and a widespread framework of quality preservation for EOL care including ACP. EOL care bonuses provided by national governments might improve care and reduce unnecessary complications and expenditures on preventable hospitalizations of nursing home residents in other developed countries.

4.5. *Limitations of the study*

The present study has several limitations. First, due to the nature of a longitudinal study using a questionnaire, there was a considerable amount of missing data, especially in the fiscal years predating the earliest years. Second, nursing homes that were assertive about providing EOL care in their facilities might have been more likely to respond to our questionnaires, which may have resulted in socially desirable responses, meaning that there may have been a bias in which facilities consented to participate. Third, the present study was undertaken in one prefecture only, and there may have been a bias in the selection of facilities. Fourth, the results of the study cannot explain the causal relationships due to the retrospective design. Therefore, prospective studies in other developed countries are needed.

5. Conclusions

Our analysis revealed that EOL care bonus has the potential to increase the number of residents receiving EOL care in nursing homes over several years. Owing to the increasing number, the EOL care bonus might improve the quality of EOL care in nursing homes, due to eligibility criteria. As a result, an EOL care bonus might promote quantity and quality of EOL care in nursing homes in an aging society. In addition, EOL care conferences, full-time physician support for emergent care during off-time, and being adjacent to an affiliated hospital may also contribute to EOL care in nursing homes.

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References

1. Teno JM, Gruneir A, Schwartz Z, Nanda A, Wetle T. Change in end-of-life care for Medicare beneficiaries: Site of death, place of care, and health care transitions in 2000, 2005, and 2009. JAMA. 2013; 309:470-477.
2. Sanford A. Orrell M, Tolson D, *et al.* An international definition for "nursing home". J Am Med Dir Assoc. 2015; 16:181-184.
3. Onder G, Carpenter I, Finne-Soveri H, Gindin J, Frijters D, Henrard JC, Nikolaus T, Topinkova E, Tosato M, Liperoti R, Landi F, Bernabei R. Assessment of nursing home residents in Europe: The Services and Health for Elderly in Long TERm care (SHELTER) study. BMC Health Serv Res. 2012; 12:5.
4. Akabayashi A, Slingsby BT, Kai I. Perspectives on advance directives in Japanese society: A population-based questionnaire survey. BMC Med Ethics. 2003; 4:E5.
5. Miyata H, Shiraishi H, Kai I. Survey of the general public's attitudes toward advance directives in Japan: how to respect patients' preferences. BMC Med Ethics. 2006; 7:E11.
6. Ministry of Health, Labor and Welfare, Japan. Long-term care service facilities and office survey 2006. http://*www.dbtk.mhlw.go.jp/IPPAN/ippan/sk_o_DI* (accessed January 28, 2009).
7. Saliba D, Kington R, Buchanan J, Bell R, Wang M, Lee M, Herbst M, Lee D, Sur D, Rubenstein L. Appropriateness of the decision to transfer nursing facility residents to the hospital. J Am Geriatr Soc. 2000; 48:154-163.
8. Temkin-Greener H, Zheng NT, Xing J, Mukamel DB. Site of death among nursing home residents in the United States: Changing patterns, 2003-2007. J Am Med Dir Assoc. 2013; 14:741-748.
9. Long SO. Cultural scripts for a good death in Japan and the United States: Similarities and differences. Soc Sci Med. 2004; 58:913-928.
10. Hunt KJ, Shlomo N, Addington-Hall J. End-of-life care and achieving preferences for place of death in England: Results of a population-based survey using the VOICES-SF questionnaire. Palliat Med. 2014; 28:412-421.
11. Morin L, Johnell K, Van den Block L, Aubry R. Discussing end-of-life issues in nursing homes: A nationwide study in France. Age Ageing. 2016; 45:395-402.
12. Mitsubishi research institute. Study report on securing quality of facility service in special nursing home for the aged (2007). *http://www.mri.co.jp/project_related/hansen/uploadfiles/HLUkouseih18_2.pdf* (accessed August 28, 2016). (in Japanese)
13. Ministry of health, labor and welfare, Japan. social security commission on long-term care reimbursement No. 39 (*2006*). *http://www.mhlw.go.jp/shingi/2006/01/dl/s0126-9c2.pdf* (accessed August 28, 2016). (in Japanese)
14. Ministry of health, labor and welfare, Japan. Notification No. 126 (2006). *http://www.mhlw.go.jp/seisakunitsuite/bunya/hukushi_kaigo/seikatsuhogo/tannokyuuin/02_hourei_04.html* (accessed August 28, 2016). (in Japanese)
15. Ikegami N, Ikezaki S. Japan's policy of promoting end-of-life care in nursing homes: Impact on facility and resident characteristics associated with the site of death. Health Policy. 2012; 105:303-311.
16. Nakanishi M, Niimura J, Endo K, Nishida A. Regional Supply of Nursing Home and Hospital Beds Determine Discharge Destination of Nursing Home Residents in Japan. J Am Med Dir Assoc. 2016; 17:672.e1-5.
17. Takezako Y, Ishikawa S, Kajii E. Advance directives in Japanese nursing homes. J Pain Symptom Manage. 2013;

45:63-70 e7.
18. Ikegami N, Ikezaki S. Nursing homes and end-of-life care in Japan. J Am Med Dir Assoc. 2013; 14:718-723.
19. Cabinet office, Japan. Aged Society White Paper (2012). *http://www8.cao.go.jp/kourei/whitepaper/w-2013/zenbun/s1_1_2.html* (accessed August 28, 2016). (in Japanese)
20. Ministry of health, labour and welfare, Japan. The seventh publication of data showing the current situation in the elderly Japanese population (2009). *http://www8.cao.go.jp/kourei/whitepaper/w-2009/gaiyou/pdf/1s3s.pdf* (accessed August 28, 2016). (in Japanese)
21. Kanagawa prefecture, local government in Japan. *http://www.rakuraku.or.jp/kaigo/w20/wpJTop.aspx* (accessed August 28, 2016). (in Japanese)
22. Kanagawa prefecture, local government in Japan. Kanagawa Prefecture Age-specific demographic survey (2015). *http://www.pref.kanagawa.jp/cnt/f11000* (accessed August 28, 2016). (in Japanese)
23. Kanagawa prefecture, local government in Japan. Annual report on hygiene (2015). *http://www.pref.kanagawa.jp/cnt/f6872/p22052.html* (accessed August 28, 2016). (in Japanese)
24. Kanagawa prefecture, local government of Japan. Number of medical facilities (2014). *http://www.pref.kanagawa.jp/cnt/f450232/p613941.html* (accessed August 28, 2016). (in Japanese)
25. Levy CR, Fish R, Kramer AM. Site of death in the hospital versus nursing home of Medicare skilled nursing facility residents admitted under Medicare's Part A Benefit. J Am Geriatr Soc. 2004; 52:1247-1254.
26. Houttekier D, Cohen J, Surkyn J, Deliens L. Study of recent and future trends in place of death in Belgium using death certificate data: A shift from hospitals to care homes. BMC Public Health. 2011; 11:228.
27. Levy C, Hutt E, Pointer L. Site of death among veterans living in Veterans Affairs nursing homes. J Am Med Dir Assoc. 2012; 13:199-201.
28. Houttekier D, Cohen J, Bilsen J, Addington-Hall J, Onwuteaka-Philipsen B, Deliens L. Place of death in metropolitan regions: Metropolitan versus non-metropolitan variation in place of death in Belgium, The Netherlands and England. Health Place. 2010; 16:132-139.
29. Takezako Y, Tamiya N, Kajii E. The nursing home versus the hospital as the place of dying for nursing home residents in Japan. Health Policy. 2007; 81:280-288.
30. Motiwala S, Croxford R, Guerriere DN, Coyte PC. Predictors of place of death for seniors in Ontario: A population-based cohort analysis. Can J Aging. 2006; 25:363-371.
31. Bedell SE, Pelle D, Maher PL, Cleary PD. Do-not-resuscitate orders for critically ill patients in the hospital. How are they used and what is their impact? JAMA. 1986; 256:233-237.
32. Silveira MJ, Kim SY, Langa KM. Advance directives and outcomes of surrogate decision making before death. N Engl J Med. 2010; 362:1211-1218.
33. Robinson L, Dickinson C, Rousseau N, Beyer F, Clark A, Hughes J, Howel D, Exley C. A systematic review of the effectiveness of advance care planning interventions for people with cognitive impairment and dementia. Age Ageing. 2012; 41:263-269.
34. Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: Randomised controlled trial. BMJ. 2010; 340:c1345.
35. Brinkman-Stoppelenburg A, Rietjens JA, van der Heide A. The effects of advance care planning on end-of-life care: A systematic review. Palliat Med. 2014; 28:1000-1025.
36. Weathers E, O'Caoimh R, Cornally N, Fitzgerald C, Kearns T, Coffey A, Daly E, O'Sullivan R, McGlade C, Molloy DW. Advance care planning: A systematic review of randomised controlled trials conducted with older adults. Maturitas. 2016; 91:101-109.
37. Martin RS, Hayes B, Gregorevic K, Lim WK. The effects of advance care planning interventions on nursing home residents: A systematic review. J Am Med Dir Assoc. 2016; 17:284-293.
38. Matsui M, Braun KL, Karel H. Comparison of end-of-life preferences between Japanese elders in the United States and Japan. J Transcult Nurs. 2008; 19:167-174.
39. Ni P, Zhou J, Wang ZX, Nie R, Phillips J, Mao J. Advance directive and end-of-life care preferences among nursing home residents in Wuhan, China: A cross-sectional study. J Am Med Dir Assoc. 2014; 15:751-756.

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