

Healthcare Needs of the Elderly People over 85 Years Living Alone on the Island Area in Japan: A Descriptive Study

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Abstract

Background: Japan has the highest aging people accounting 33.8 million with the rate of 26.7% in 2015. Although, public long-term care insurance services support people age 40 years and above, most of the users are 85 years and over due to their more vulnerability for getting sick. This study describes the physical, mental and social status of the elderly people aged 85 years and over, who were living alone at home. **Method:** A cross-sectional study was conducted between November 2016 and March 2017 in the island of Kure city, Hiroshima, Japan. A structured questionnaire and scales were used for data collection and documentation of physical measurements. Descriptive analysis was used. **Result:** A total of 190 subjects were participated, and the data were analyzed. The age range of the subjects was 85 to 98 years, and 68.4% of them were 85 to 89 years old. Male and female ratio was 21.6% vs 78.4%. Subjects of 17.4% continued their occupation at the time of the study period and most of them involved in agricultural work (93.9%). A certain percentage of the subjects had abnormal physical, mental and social difficulties and need additional support from family, friends, relatives, and community. **Conclusion:** Early detection and intervention such as disease management, nutritional support, and human support are required. The findings suggested policy makers to predict the burden and provide necessary care for these elderly people. It is necessary to aware family, friends, relatives, community and government supporting staff to provide information on correct recognition and usages of long-term care insurance services for these elder people.

Keywords

Elderly, Living Alone, Long-Term Care Insurance, Japan

1. Introduction

The population in Japan is declining due to the constrictive pattern of birth rate and turning into super-aged society since 2007. The elderly people aged 65 years or older as of 2015 were 33.8 million and the aging rate was 26.7%, the highest in the world [1]. In particular, over 75 years old elderly people, who are living alone, continue to grow that can affect the sustainability of the social security support system, which is becoming a major issue for the government [2]. Moreover, the “baby-boomer generation” will enter in late elderly aged 75 years and older in 2025 [3], which will be needed additional support through the comprehensive approach and service provision system (The Integrated Community Care System) provided by the national government.

According to the nationwide survey in 2012, 54.6% of respondents aged 55 years and more, answered that they wish to die at home [4]; however, the death rate at home was only 12.8% [5], and it reflects a huge discrepancy. Currently, the usages of public long-term care insurance services for the elderly people aged 75 years and over are rapidly increasing. The age group of 85 years and over, who is more vulnerable for getting sick is receiving the services twice compare to the earlier age group (75 to 84 years) [6]. The prevalence rate of different diseases in this age group is also reported higher compared to other age groups [7]. The level of health condition and healthy feelings declined with age [4], and consequently increased the risk of death [8]. Declining the living functions is a risk factor for elderly people that can cause bedridden in association with homebound [9].

Kure City of Hiroshima Prefecture was the survey area that had aging rate age (65 years and over) of 33.5% at the end of March 2016, the highest among the municipalities of the same size. The aging rate of the center of Kure city was 24.4% compared to 59.7% in the island part, which showed the wide regional disparity [10]. In a survey of the aging people conducted by the Kure City in 2014, 47.5% of elderly people responded that they would like to stay at home even if they become care needy situation in the future instead of clinic or hospital for their nursing care. However, the mortality rate at home was only 13.8% [11]. This is the reality in Kure city as many elderly people want to die at home, although finally they admitted in the hospital up to death. Therefore, the purpose of this research is to describe the comprehensive (physical, mental, and social) status of the elderly people aged 85 years and over for early detection and prevention of unplanned aggravation of conditions. This study findings will give the glimpse to policy makers about the necessary support of the elderly people while living alone at home.

2. Methods

2.1. Subjects

Subjects were residents of Kure city island area selected from the resident registry of Kure city municipal government in March 2016. Inclusion criteria were at

the time of the survey: 1) aged 85 years and older and 2) lived alone at homes. Exclusion criteria were at the time of the survey: 1) hospitalized, 2) living in a nursing home, 3) absent for 3 consecutive home visits, 4) did not agree to participate and 5) died or moved or living with other persons.

2.2. Research Design and Procedure

A cross-sectional study was conducted from November 2016 to March 2017. The data were collected from the resident registry of Kure city municipal government, and 303 participants were identified as eligible. The Kure city informed the subjects to participate in this study. The subjects were requested to come to the nearest community center on a prescheduled day. The subjects who were not able to visit the center, afterward a home visit was conducted by the researchers. A structured questionnaire was used for data collection and documented the physical measurements.

2.3. Questionnaire Items

The components of the questionnaire were created by the researchers to describe subjects' basic attributes, physical condition including cognitive status, mental conditions, and social conditions with the reference of comprehensive geriatric assessment [12], and future thought of life. To describe physical and mental conditions, we used standardized scales as listed below. We also assessed physical conditions by the features of the physical measurement. The questionnaire was consisted of five main categories.

1) Socio-demographic characteristics including age, gender, and occupation at the time of the study.

2) Physical conditions: blood pressure, pulse, respiration, cognitive function assessed by Hasegawa's Dementia Scale-Revised (HDS-R) (Conducted only when declines in the activities of daily living (ADL) and cognitive reply), edema, Mini Nutritional Assessment-Short Form (MNA) [13], body mass index (BMI), appetite, dental condition, hearing and vision, frequencies of going out operationally categorized the subjects who did not go out at all or who did not go out within a week as "withdrawal", and the subjects who go out more than once a week as "not withdrawal" [14], walking state, pain, and history of medical illness and hospitalization. Physical status was evaluated by asking questions and physical examinations without any invasive procedures.

3) Mental condition: Subjective sense of well-being was measured by four-point Likert scale (healthy, somewhat healthy, somewhat unhealthy, and unhealthy), Personal Health Questionnaire 2 (PHQ2) [15] were used to assess the depression, anxiety, and worries.

4) Social condition: Type of residence, human support, support for meals and knowledge about the long-term care insurance system.

5) Future thoughts on life: Intention to use long-term care insurance service, thoughts of the end of life, preoccupied thoughts about dying, create a testa-

mentary will, and a place to spend the end of life.

2.4. Data Analysis

Descriptive statistics were conducted for data analysis by using the software SPSS version 21.0.

2.5. Ethical Consideration

This research was approved by the Epidemiological Ethics Review Committee of Hiroshima University (No. E-530-1). The survey was conducted anonymously when subjects agreed to consent.

3. Results

3.1. Participation (Figure 1)

Out of 303 subjects, 190 subjects were enrolled, and data were analyzed. Totally

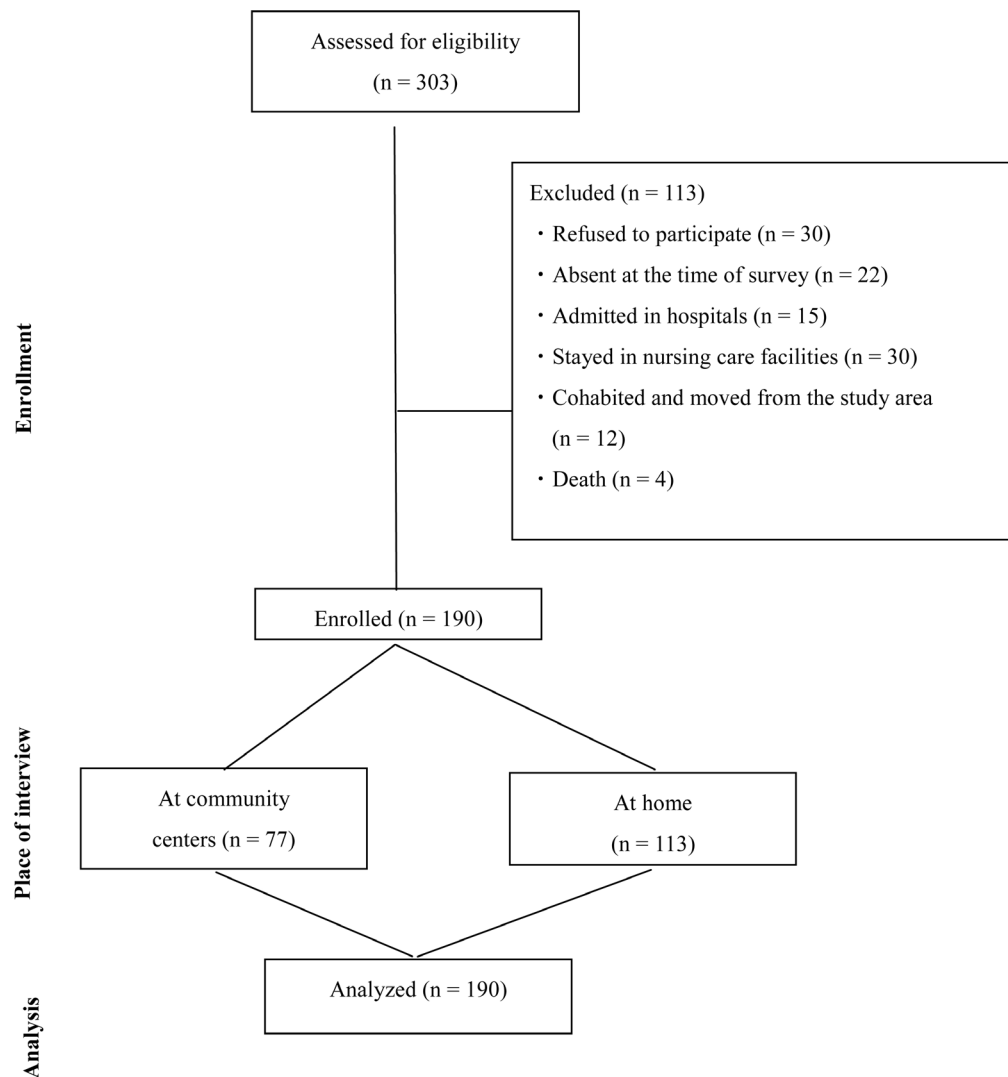


Figure 1. Consort flow chart for subject enrollment.

113 subjects were excluded; 15 were hospitalized; 30 were at nursing homes; 12 moved to other places such as children's homes; 4 were dead; 22 were absent for 3 times during the survey; and 30 did not provide consent. Among the 190 subjects, 77 visited at the community centers, and remaining 113 were at home.

3.2. Basic Attributes of the Subjects

The age range of the subjects were from 85 to 98 years, and 68.4% of them were from 85 to 89 years old. Among them, 21.6% were male and 78.4% were female, and 17.4% continued their occupation at the study time, out of them mostly agriculture (93.9%) (Table 1).

3.3. The Physical, Mental and Social Condition of the Subjects

1) Physical Conditions: (Table 2)

Out of 189, 49.7% had high blood pressure, 18.9% arrhythmia and 3.4% tachypnea. Subjects of 5.9% cognitive function declined. Pedal edema 52.9%, malnutrition and had risk of malnutrition 36.3% and low body weight was 11.3%. There were 79.5% used dental prostheses, and 8.4% had no teeth or many teeth defects. Hearing and vision problem were 37.9% and 14.3%, respectively. While walking, 61.6% needed assistive tools. Physical pain had 72.6% and history of medical illness, and hospitalization were 95.3%.

2) Mental Conditions: (Table 3)

Table 1. Socio-demographic characteristics. N = 190

Age		85 to 89		90 to 94		95 to 100			
		Number of people	%	Number of people	%	Number of people	%		
Sex	Male	41	21.6	30	15.8	11	5.8	0	0.0
	Female	149	78.4	100	52.6	44	23.2	5	2.6
		190	100.0	130	68.4	55	29.0	5	2.6
Job	Yes	33	17.4	26	13.7	7	3.7	0	0
	No	157	82.6	104	54.7	48	25.3	5	2.6
		190	100.0	130	68.4	55	29.0	5	2.6
Previous job type (Top five)		190							
Agriculture		112	58.9						
Fisherman		23	12.1						
Factory worker		16	8.4						
Professional		14	7.4						
Construction worker		9	4.7						
Age range from 85 to 98 years									

Table 2. Physical condition of the subjects. N = 190.

Physical state	Effective reply		Number of people	%
Blood pressure *	189	I degree	74	39.2
		II degree	15	7.9
		III degree	5	2.6
Pulse (Breakdown)	190	Arrhythmia	36	18.9
		Pulse of rhythm abnormalities	14	7.4
		Less than 60 beat/min	14	7.4
		Less than 60 beat/min & rhythm abnormalities	3	1.6
		100 beats/min or more	5	2.6
Respiration	179	Tachypnea (≥ 25 /min)	6	3.4
Cognitive function (HDS-R)	16	Decline (Score ≤ 20)	11	68.8
Edema	187	Present	99	52.9
Mini Nutritional Assessment (MNA [®])	179	Malnourished	1	0.6
		At risk of malnutrition	64	35.8
BMI	160	<18.5	18	11.3
Appetite	190	Moderate decline	17	8.9
		Significant decline	2	1.1
Tooth condition	190	Denture	151	79.5
		Severe defect	16	8.4
Past medical history (Breakdown of the top six)	190	Present	181	95.3
		Hypertension	80	44.2
		Cataract	47	26.0
		Bone fracture	37	20.4
		Heart disease	34	18.8
		Dyslipidemia	33	18.2
Hospitalization history (Breakdown of the top six)	190	Present	154	81.1
		Bone fracture	33	21.4
		Digestive diseases	28	18.2
		Cataract	26	16.9
		Cancer	24	15.6
		Cerebrovascular disease	21	13.6
Hearing impairment	190	Able to hear only loud sounds	72	37.9

Continued

Vision	182	Not able to read newspaper	26	14.3
Walking condition	190	Able to walk by using auxiliary tools	117	61.6
Frequency of going out	188	Didn't go out > 1 week	9	4.8
Thoughts on going out	187	Feeling burden	82	43.9
		Worried about physical condition	56	29.9
		Troublesome and dislike	16	8.6
		Transportation inconvenient	13	7.0
Physical pain	190	No purpose	5	2.7
		Economic burden	2	1.1
		Present	138	72.6
Site of pain	138	Knee joint	67	48.6
		Low back pain	59	42.8

*Blood pressure: I degree (systolic 140 to 159 mmHg and/or diastolic 90 to 99 mmHg), II degree (systolic 160 to 179 mmHg and/or diastolic 100 to 109 mmHg), III degree (systolic 180 mmHg or more and/or diastolic 110 mmHg or more) (The Japanese Society of Hypertension Committee for guidelines for treatment of hypertension, 2014).

Table 3. Mental condition of the subjects. N = 190.

Mental condition (item)	Effective reply		Number of people	%
Subjective sense of well-being	186	Unhealthy	29	15.6
Depression trend (PHQ 2)	187	Yes (>1 item)	17	9.1
Anxiety and worries (Breakdown)	188	Present	106	56.4
		Own health	54	50.9
		Accident & falling down	35	33.0
		Family health	29	27.4
		Disaster	15	14.2
		Excretion of waste on the way	14	13.2
		Don't have someone to take care of	6	5.7
		Place to live at the end of life	5	4.7
		Lonely feeling	17	16.0
		Financial problem	11	10.4

Table 4. Social condition of the subjects. N = 190.

Social condition	Effective reply		Number of people	%
Type of residence	190	Single-family house	189	99.5
Consultation partner	189	Present	184	97.4
(Breakdown)		Children	152	82.6
		Relatives	67	36.4
		Primary care doctor	63	34.2
		Neighbors	59	32.1
		Friends	44	23.9
		District welfare officer	41	22.3
		Care Manager	16	8.7
		Acquaintances	13	7.1
		City office	7	3.8
		Appointed regional chairman	3	1.6
		Integrated care management Center	3	0.5
Emergency contact person	189	No	6	3.2
Support person in daily life	190	No	49	25.8
Cooking person	190	Self + Others help	20	10.5
		Others help	18	9.5
Long-term care insurance system				
Knowledge of existence	189	Don't know	47	24.9
The method of procedure	189	Don't know	140	74.1
Services available in the region	189	Don't know	107	56.6

Subject of 15.6% reported unhealthy, 9.1% had depressive illness, and 56.4% suffered from anxiety and worries.

3) Social Conditions: (Table 4)

Subjects of 99.5% lived in their own house, and 3.2% had no contact person during emergency. The subjects who did not receive daily support were 25.8%.

3.4. Subject's Knowledge about the Long-Term Care Insurance System

Out of 190 subjects, 189 (98.9%) were responded about the Long-Term Care Insurance System. Subjects of 24.9% had no knowledge about the existence, 74.1% did not know about the access, and 56.6% did not know about the availability of the regional services of the long-term care insurance system (Table 4).

3.5. The Results of the Future Thoughts about Their Life and Usages of Long-Term Care Insurance Service

Subjects of 61.2% did not want to use long-term care insurance service; 89.5% wished to die without bothering anyone; 14.4% desired to receive highest satisfactory medical treatment, 31.0% wanted to receive palliative treatment for pain

Table 5. Intention of the subjects. N = 190.

Future intention of life about death	Effective reply		Number of people	%
Intention to use long-term care insurance services	183	Don't want	112	61.2
Living at home without using the long-term care insurance services	188	Yes	129	68.6
Living at home with using long-term care insurance services	187	Yes	120	64.2
Intention to move in the house for senior citizen with services	187	Yes	12	6.4
Intention to move to a long-term care facility since healthy condition	188	Yes	9	4.8
Intention to move to a long-term care facility when become care needed	184	Yes	66	35.9
Want to die without bothering anyone	181	Yes	162	89.5
Intended to receive highest satisfactory medical treatment at the end of life	174	Yes	25	14.4
Intended to receive palliative care (e.g. relieve pain) at the end of life (excluded subjects who answered above)	174	Yes	54	31.0
Natural Death without medical treatment	174	Yes	78	44.8
Spending rest of the life with family and friends	167	Yes	74	44.3
Expressing weakening features to others	167	No	40	24.0
In case of home death while living alone, the police comes	174	Yes	83	47.7
Those who think that they cannot die in a hospital unless they are visiting regularly in a hospital	168	Yes	49	29.2
Already prepared a will testament	179	Yes	17	9.5
Would like to prepare a will testament	178	No	143	80.3
Place of spending the end of life	187	Own home	111	59.4
		Hospital	27	14.4
		Other facilities	8	4.3
		Unknown	34	18.2
		Others	7	3.7

and suffering; 44.8% wished to follow the natural dying process without getting any medical treatment; 44.3% desired to spend rest of their life with families and friends. Regarding dying, 47.7% thought if they die alone at home, the police came for inspection, therefore, it was shame to die at home alone; 29.2% thought

that they could not die in the hospital if they were not hospitalized early enough. Only 9.5% prepared a testamentary will and 80.3% did not want to prepare. More than half (59.4%) of the subjects wished to spend the end of life at home; the remaining 14.4% at the hospitals; 4.3% at nursing facilities; 3.7% at other places; and 18.2% responded unknown (Table 5).

4. Discussion

This study figured out the physical, mental, social status, and thoughts of end of life of the elderly people living alone on the island of Kure city. A certain percentage of the subjects had abnormal signs and symptoms, which are easy to detect. For this vulnerable population, early detection and intervention such as disease management, nutrition support, and human support are necessary. The findings of this study will facilitate the municipal government to predict the burden and provide required care for these elderly people. The public health nurses can conduct regular home visit to identify and provide self-management education to the patients and connect with the primary care physicians for any illness.

About half of the subjects had high blood pressure with a higher percentage of grade I. There were other symptoms of arrhythmia (18.9%), tachypnea (3.4%), and more than half of them (52.9%) had pedal edema. It is alarming that, they had also the history of cardiovascular diseases (18.8%) with the risk factor of dyslipidemia (18.2%). Most of the subjects suffered from physical pain. Knee and low-back pain can be triggered by accidental fall and many of them used auxiliary tools for their walking. Approximately 36.3% of the subjects had malnutrition and also had risk of malnutrition, which was significantly higher than the low nutrition ratio of Japanese aging people, 2% to 14% [16] [17]. Additionally, the immune function also can decline, which increases the susceptibility to infectious diseases commonly pneumonia. Mortality from pneumonia in Japan is the third-leading cause of death [18]. Therefore, the improvement of malnutrition is an important measure among aging people to hinder the need for long-term care. For elderly living alone, the number of meals decreased due to malfunction of body mechanisms and troublesome, the same drift also reported as a decrease in dietary intake and nutrition tends to be biased from a long-term viewpoint [19]. In addition, most of the subjects had the denture, and 8.4% had no teeth or defective teeth. Recent studies reported that when the teeth were missing, and the prosthesis were not worn, elderly people not able to intake nutrition sufficiently and ultimately deteriorating their health condition [20] [21]. Continuous low nutrition leading to lower physical strength and decreased activities and increasing the risk of bedridden [22]. Municipal government needs to be established nutritional support program for the elderly people. Existing public health nurses and nutritionists can provide nutrition education and food supplements.

Ultimately, patient may develop dementia [23] and there is a high-risk [24] to

deteriorate the quality of life [25]. It could be prevented at the community level by early detection and proper management [26]. Regarding the mental state, 15.6% of subjects responded unhealthy and in the previous studies, it was 26.8% [27] and 24.6% in the regional cities in Japan [28]. The self-perception of the subjects [29] was healthy regardless of disease or disability. It is the important psychological function that subjective health sense is high due to living alone. On the other hand, more than half of the elderly people had worries and anxieties, and about half of them were concerned about their own health. Their worries were simple, such as accidental fall and incontinence when going outside. We can provide professional support to take care of these physical and mental conditions. Collaborating with the municipal government, disease management nurses or nurses at primary care clinics can provide telenursing and telemonitoring systems for monitoring vital signs and to manage any abnormalities.

The anxieties are not only causing a feeling of lowering health quality but also may affect depression tendencies, which had of 9.1% subjects. The elderly people those living alone were supposed to have a slight depression tendency [30]. It is considered that the deterioration of depressive symptoms is difficult to understand, and support of others is essential. The tendency of depression is strongly related to a subjective sense of wellness [29]. The risk of death of those who responded that subjective sense is unhealthy will be higher than those who positively answered [8]. As a result, the efforts in a region with a sense of security that can quickly find and respond to strengthen the system, so that subjective health feeling can be kept high. There were 15.0% of dementia patients in Japan [31]; however, 5.9% subjects had declining cognitive function in this survey. Dementia was the most common in the elderly people, followed by cerebrovascular diseases [32]. It has been reported that the onset of Alzheimer's type dementia is eight times higher when living alone and inclines to the homebound tendency [33]. It is considered that the occurrence rate of homebound is about 10% to 15% in the elderly people aged 65 or older and exceeds 20% over 75 years old [14]. In this study, most of the elderly people had emergency contact persons and surrounding supports in daily life. As a result, it is needed to aware family members, relatives and other members for prompt detection of dementia and withdrawn and take necessary initiatives. However, a certain number of subjects had neither emergency contact nor surrounding support. Therefore, municipal government needs to introduce these people to proper support. In addition, the daily monitoring system is needed, since this very vulnerable population once something occurs; they are taken to the hospital and never come back home and die at the hospital.

Although, the long-term care insurance exists in the health care system, the elderly alone people still mostly depended on their children, relatives, primary care doctors, neighbors, and friends. Elderly people of 75.1% had the knowledge about long-term care insurance system, and many people did not know about the insurance procedures and services available in the study area. In a study

found that about 60% of the family members knew about the insurance system [34]. Therefore, it is necessary to establish a comprehensive approach to provide knowledge to the elderly people and their consultation partners on information about services and the procedures of insurance system. Moreover, management connecting the long-term insurance service by engaging community or primary care nurses needs to identify and include the elderly people who are out of services. Elderly people need to be encouraged to participate regularly in the annual health check up that cost covered by the municipal government.

Approximately, 59.4% study subjects wanted to spend their end of life at home, similar (54.6%) finding was reported in a preceding survey; however, their age range was 55 years and older [4]. Subjects of 89.5% wanted to die without bothering anyone, comparable to the national data where it was found that about half of people did not want to ask the family members for their necessary treatment [35]. Around half (44.8%) of the subjects wanted natural death without medical treatment, and 44.3% wanted to spend rest of their life with family and friends. Only 19.7% intended to prepare the last will testament. Although 59.4% subjects wanted to die at home, 47.7% believed that police would come due to the lonely death, for that reason 29.2% wanted to admit in the hospital before dying.

5. Conclusion

Majority of the subjects had some physical, mental and social difficulties. It needs special attention to support the elderly people within the community system. Although Japan is a developed country, malnutrition exists among the elderly people that need to be considered. We believe that it is necessary to provide information on correct recognition and long-term care insurance services in a manner appropriate to each elderly involving family, friends, relatives, community and government supporting staff for proper care of these elderly people. Dissemination of knowledge and educate community people about the available care services and how to use them effectively to prevent any impending adverse and serious events. This study figured out that creating opportunities for preparing and thinking about advance care planning including their families.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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