Clarification of psychosocial factors required for continuance of life of elderly men living alone in heavy snowfall and underpopulated areas

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Abstract

Purpose: The aim of this study was to clarify psychosocial factors supporting elderly men who were living alone in a heavy snowfall area where the population aging rate exceeded 40%.

Methods: The authors conducted semi-structured interviews with six elderly men living alone. As the method of analysis, we conducted a hierarchical cluster analysis of the contents of the interviews via text mining.

Results: As a result, we found the psychosocial factors supporting the elderly men living alone. We divided the factors into six categories: “well-planned roof snow removal”, “interaction with young people”, “realization of the meaning of life via driving”, “engagement in leisure and recreational activities”, “living a life aligned with personal preference” and “insistence on living alone”.

Conclusion: Formal and informal networking that avoids debasing these psychosocial factors required for the continuance of living life alone is necessary.

Key words: elderly over 80 years old, elderly men living alone, a heavy snowfall area, text mining

Introduction

As of October 1, 2016, the total population of Japan was 126,930,000 people, of which 34,590,000 were members of the elderly population³. The total population of Japan in 2011 was 127,800,000 people, of which 29,750,000 were members of the elderly population⁴. Although the total population decreased, the elderly population increased. Out of the entire elderly population 15,000,000 were men and 19,590,000 were women; the ratio of men to women was approximately 3:4⁵. In addition, the increase in the number of elderly people living alone was remarkable in both sexes. Although among the elderly, 4.3% of the men lived alone and 11.2% of the women lived alone in 1980, by 2015, 13.3% of the men lived alone and 21.1% of the women lived alone⁶. The number of elderly men living alone appears to be increasing. Consequently, it is predicted that the number of elderly people living alone will continue to increase, especially among elderly aged 80, whose numbers will rise significantly.

There was an increase in the life-time non-marriage rate as the factor of increasing of elderly men living alone. The rate of the life-time non-marriage was 23.37% in men and 14.06% in women in 2015. Therefore, one in four males and one in seven females stayed single their entire life⁷, ⁸. It is been found that increase in older, one-person households due to individuals remaining single increases risk of socially isolation and becomes a serious problem mainly in men⁹. Because of this situation, support for elderly men living alone to continue their daily lives is necessary.

Previous studies have reported that husbands more than wives, experience the sorrow of losing a spouse that is likely to result in physical and mental problems that cause isolation from society in spite of the fact that sorrow varies from person to person⁵, ⁶. On the other hand, analysis of senior couples revealed that wives are more likely than husbands to live alone. Therefore, there have been more studies on elderly women living alone than men living alone. Accordingly, we need to examine the supports needed for elderly
men living alone to live by their own values within their communities.

Thus, this study aims to determine the psychosocial factors that impact support for elderly men aged 80 years or older living in an area of heavy snowfall, an aging population, and depopulation.

**Study Method**

**Study design**

In this study, we used a qualitative and descriptive study design instead of a quantitative study design in order to examine the realistic lives of elderly men living alone from a psychosocial perspective.

**Subjects (Table 1)**

Six men aged 80 years or older living alone who had no communication impairment and lived independently in town O were interviewed.

**Period of study**

The study was conducted in August, 2017.

**Survey method**

Semi-structured interviews were conducted. We used the interview to collect data on 1) basic attributes (age, marital status, number of children, and transportation) and 2) daily life. The interviews lasted for no more than 40 minutes in consideration of the subjects’ physical conditions due to their ages. In addition, the content of the interviews were recorded with the approval of each subject and later deleted after verbatim records had been made.

**Method of date analysis**

We extracted the words of interviewees from the contents of the interview and digitized them. Subsequently, we analyze the content via text mining. To analyze the date from the interviews, we used a quantitative text analysis (KH Coder Ver.2.00f)\(^7\). We checked for the presence or absence of data error of the digitized answers, broke the answers down into morphemes, then processed them. In the process of speech to text, replacement of synonym and processing of orthographical variants, such as describing “good” and “nice” as “good” and “snow removing”, “snow shoveling”, and “clearing snow” as “snow removing”, was done with consideration to context.

A hierarchical cluster analysis using Ward’s method was conducted to calculate the occurrence rates of answers and to find collocation by use of frequently appearing words. Ward’s method is used to minimize the sum of squares of data within clusters and is regarded as a balanced approach in cluster analysis\(^8\). In addition, we described our analysis results to researchers who were familiar with quantitative research in order to examine the validity of our results.

**Ethical consideration**

We provided oral and written explanation of the study to the subjects and obtained their written consent. The consents of the explanation is below:

1) Participation in the study was of their own free will.
2) No subjects was to suffer any disadvantages by joining the study.
3) The information obtained would not be used for any purpose other than the study.
4) The results obtained would be published in scholarly journals and other similar publications.
5) The data would be discarded after the completion of the study.

The gathered data was managed under lock and key. We tried not to include personally identifiable information in the electronic data and to avoid identifying individuals and the study region when we analyzed them and published the results. In addition, this study was conducted with the approval of a research ethics committee at Nihon Institute of Medical Science.

**Characteristics of the study region**

This study was conducted in O town, a town designated as a heavy-snow fall area by the Japanese Ministry of Land, Infrastructure and Transport and Tourism, with special status under the Act of Special Counter Measures. A heavy-snowfall area is an area with large snow cover resulting in marked obstacles to the carrying on of resident life due to traffic hazards and other hazards. Eighty percent of the total area of O town is covered with forests. The basic industries in the town are agriculture and mining. The population of

| Age   | Spouse   | Number of child | Transportation |
|-------|----------|-----------------|----------------|
| 88    | Bereavement | Son(2), Daughter(1) | Car         |
| 83    | Bereavement | Daughter(2)      | Car         |
| 84    | Bereavement | Son(1), Daughter(1) | Car         |
| 82    | Bereavement | Son(1), Daughter(3) | Car         |
| 82    | Elderly facility entrance | Son(1)      | Car         |
| 82    | Unmarried | No one          | Car         |

Table 1 Description of the subjects
the town is approximately 3,000 people and the population aging rate was over 40% in 2017. Thus, depopulation and aging are progressing in the town.

**Results**

As a result of breaking down the contents of the interview about psychosocial factors supporting elderly men living alone into morphemes, the total number of tokens was 4,520 and the total number of types was 820. The terms that frequently appeared were “go”, “think”, “car”, “now”, “snow”, and “park golf”, in order of detection. Subsequently, we checked merging level and distance between clusters, and conducted a hierarchical cluster analysis in order to examine the collocation of the frequent words (the minimum number of occurrences was four and the minimum number of sentences was one). The results were classified into six clusters (Figure 1).

**Cluster 1. “Well-planned roof snow removal”**

Cluster 1 was composed of terms such as “have”, “roof”, and “fall”. We checked original sentences, and the terms were used in the sentences as presented below:
1. “Snow has fallen because a roof is warming due to having a fire made by a stove in three floors just below the roof”.
2. “I used to remove snow by my hands, but I feel scared of getting on a roof nowadays and my children also tell me to stop doing that because it is dangerous”.
3. “Snow on a roof is falling as a result of warming for three or four hours via an oil stove in the cottage”.

**Cluster 2. “Interaction with young people”**

Cluster 2 was composed of terms such as “young”, “say”, “stop”. The terms were used in the sentences as presented below:
1. “My friends gradually disappeared from me. Thus, there are youth centered around me … Because people 80 years old or over stopped gathering on the grounds, it was hard to meet each other”.
2. “I am told that I’m so young in spirit, so I answer that’s because I am communicating with younger people”.

**Cluster 3. “Realization of the meaning of life via driving”**

Cluster 3 was composed of such terms as “worry”, “think”, “ride”, and “many”.
The terms were used in the sentences as presented below:
1. “What I worry about the most is the time when I won’t be able to drive a car”.
2. “Going shopping by my car is my pleasure”.
3. “Ceasing to drive a car is, so to speak, equal to loss of the meaning of life”.
4. “I go shopping when there are parking spaces available and fewer people”.

**Cluster 4. “Engagement in leisure and recreational activities”**

Cluster 4 was composed of terms such as “friend”, “come”, “park golf”, “go”, “hospital”, and “go out”. The terms were used in the sentences as presented below:
1. “I haven’t had a friend since I came here, but I’ve got new friends from park golf now”.
2. “My pleasure is playing park golf”.
3. “I go to park golf courses with my friends by car even in the winter. It is interesting because I go there with three or four friends together”.
4. “I joined a soba club and learned how to make soba… I make soba and hand soba out to about four friends at the end of the year. I can do it because I like making soba”.

**Cluster 5. “Living a life aligned with personal preferences”**

Cluster 5 was composed of terms such as “like”, “admit”, “look at”, “put into”, “fall”, “myself”, “think”, “see”, “snow removing”, “eat”, and “good”. The terms were used in the sentences as presented below:
1. “Now, I’m doing what I really like, but if I’m admitted to a nursing home, I won’t be able to do what I’m doing now”.
2. “I feel at ease because I can do what I like now”.

**Cluster 6. “Insistence on living alone”**

Cluster 6 was composed of terms such as “vegetable”, “make”, “a just cause”, “hurt”, “hard”, “conduct”, “buy”. The terms were used in the sentences as presented below:
1. “It’s my pleasure to make things because I’ve grown up working in the fields”.
2. “Although my back hurts, I’d like to stay alone as much as I can”.
3. “Cooking is not hard because I buy foods that I can cook using recipes written on how to cook them”.
4. “I can get vegetables in the fields and buy everything, including fish and meat in the shops. So even if I live alone, cooking is not hard for me”.

**Discussion**

Again, the aim of this study was to clarify psychosocial factors supporting men aged 80 and older living alone in a heavy-snowfall area where depopulation and aging were progressing. We examined six psychosocial factors (clusters 1 to 6), which were classified from the results of hierarchical cluster analysis by text mining.
Cluster 1. “Well-planned roof snow removal”

Control of the amount of snow on a roof in winter is critical in a heavy-snowfall area. The subjects were used to removing snow from the roof because they had done so since they were children. One subject said, “I used to remove snow by my hands from the roof. However, I am scared of getting on a roof and my children tell me to stop doing that because it is dangerous nowadays.” Subjects indicated that they realized it was dangerous to get on a roof. One subject commented, “I feel snow removing gradually becomes dan-
gerous in winter because I may have troubles if I fall down from the roof due to living alone”.

Regarding the number of deaths caused by snow in winter, it has been reported that more men than women were victims and the number of people aged 65 or over accounted for approximately two-thirds of all deaths by snow. Most of the causes of death were “accidents in cleaning snow including snow removing on a roof” [8, 10]. Although subjects felt physically out of shape due to their age, they did engage in snow control activities such as removing snow from the roof.

Subjects responded to life in a heavy snowfall area with their knowledge and experience: they practiced performing countermeasures on the roof using methods with less physically burdensome.

Cluster 2. “Interaction with young people”

One subject commented. “My friends gradually disappeared from me. Thus, there are youth centered around me”. “I am told that I’m so young in spirit, so I answer that’s because I am communicating with youths”.

The subjects did not lament that they were losing their generation. They accepted the situation calmly and started communicating with young people. In previous studies, it has been reported that factors leading to social isolation were being male or old age and living alone. Although subjects felt physically out of shape due to their age, they did engage in snow control activities such as removing snow from the roof.

Subjects responded to life in a heavy snowfall area with their knowledge and experience: they practiced performing countermeasures on the roof using methods with less physically burdensome.

Cluster 3. “Realization of the meaning of life via driving”

Although the subjects made comments such as “There’s no point in thinking. What I worry about the most is the time when I won’t be able to drive a car” and “Ceasing to drive a car is, so to speak, equal to loss of the meaning of life”, increase in the number of car accidents of recent years caused by senior drivers is becoming a social concern.

Furthermore, it has been reported that the number of fatal accidents by drivers aged 80 years or older and a share of the senior drivers in the composition rate has been on the increase. However, it is difficult for people living in underpopulated areas and areas with an older population to go to the hospital or to shop without a car. We believe that driving a car led to the prevention of being a house body, to the continuance of and independent life, and to expansion of activities. In a study on help-seeking preferences of elderly that compared subjects by gender, it was reported that women’s preferences were higher than men’s.

It would appear that some of subjects considered returning their car licenses from such comments as “Although it is hard for me to live without a car, I think I will stop driving someday because the risk of driving gradually increases with age”. However, there is a problem that public transportation is difficult to use in many underpopulated areas and areas with an older population. Thus, driving a car adds meaning to their lives and supports their living alone in these situations.

Cluster 4. “Engagement in leisure and recreational activities”

Takenaka states that living freely in the old age is the most important thing, considering that appropriate living is the biggest problem in old age.

As the subjects said. “Now, I’m doing what I really like, but if I am admitted to a nursing home, I won’t be able to do like I’m doing now”. It seemed like they were enjoying their current live and facing their lives positively. Therefore, we believe that understanding the subjects in relation to their life satisfaction and life events and listening to their positive comments promoted their psychological satisfaction.

Cluster 5. “Living a life aligned with personal preferences”

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As the subjects said. “Now, I’m doing what I really like, but if I am admitted to a nursing home, I won’t be able to do like I’m doing now”. It seemed like they were enjoying their current live and facing their lives positively. Therefore, we believe that understanding the subjects in relation to their life satisfaction and life events and listening to their positive comments promoted their psychological satisfaction.

Cluster 6. “Insistence on living alone”

Subjects made comments such as “Cooking is not so hard”, “Everyone says I’m having a tough day due to the death of my wife, but I’m living a comfortable life”, “No one cooks except me”, and “I cook because I have to eat”.

Thus, they had positive attitudes toward preparing meals and strong wills to live by themselves. We believe their lives in a familiar area and insistence on living alone became psychosocial support for them, and it is important to promote networks (involving government and specialists of health, medical care, and welfare) that will improve the lives of elderly individuals, particularly men, living alone for the rest of their lives after understanding and respecting the psychosocial factors that promote their sense of independence.

Our results cannot be generalized to the entire elderly population because the number of subjects and geographic
area were limited (six subjects and one geographic area). Therefore, it is necessary to expand the number of subjects and survey areas and further investigate the psychosocial factors that support elderly men living alone. Subsequently, we will consider tangible support toward community support system construction for elderly men living alone to continue to live in the familiar areas.

**Conclusion**

One of psychosocial factors supporting elderly men aged 80 or over living alone in a heavy snowfall area was, “well-designed roof snow removal” in winter. The subjects realized the necessity of driving a car for their independent living and had “realization of the meaning of life via driving a car” because they were living in an underpopulated area with a large elderly population. They enjoyed park golf even in winter and the park golf course became a place of “interaction with young people”. In addition, they also showed “insistence on living alone” and considered eating important and never thought cooking was a burden. Thus, they had positive attitudes about their lives and experienced “realization of the life along personal preference”.

We believe that understanding elderly men living alone in relation to their life satisfactions and life events, and listening to their positive comments lead to supporting them psychologically. It has been suggested that we need to create networks which prevents debasing the six psychosocial factors that are necessary for the continuance of living alone in a familiar area.

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