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Research on the new utilization method of the Kihon Checklist in the community-dwelling elderly

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Chapter 1 Introduction

I. Introduction

Currently, the Kihon Checklist is used in comprehensive nursing care prevention projects to select subjects for general prevention projects in the community-dwelling elderly. It is also used to examine risks of requiring nursing care. The predictive validity of the Kihon Checklist a useful index for screening high-risk subjects has been examined and confirmed. In addition, a study has been conducted to predict the incidence of dependency and mortality in the elderly by classifying frailty using the Kihon Checklist total score. However, few studies have examined the relation between all-cause mortality and each domain of the Kihon Checklist. We believe that examining the relation between each function will lead to a wider range of prevention, from care needs to all-cause mortality. In the verification of prevention project effects, identifying subjects for analysis using the Kihon Checklist results at the time of the selection for prevention projects will clarify whether a prevention project is effective in extending healthy life expectancy.

II. Purpose and significance

This study aimed to examine the new utilization method of using the Kihon Checklist in selecting subjects for nursing care prevention and life support service projects. The new utilization method refers to the use of the Kihon Checklist for outcome prediction and verification of the effectiveness of care prevention.

III. Selection of baseline subjects and subjects for analysis

The study distributed copies of the Kihon Checklist by mail to all older persons aged 65 years or older in A city, Saitama Prefecture, in 2012 (for even-numbered ages) and 2013 (for odd-numbered ages). The exclusion criterion was the presence of one or more missing items in the answers to the questions.

IV. Definition of terms

＜Deterioration in Kihon Checklist score＞

The number of points for each domain in the Kihon Checklist for fiscal year 2014 was subtracted from the number of points for each domain in the Kihon Checklist for fiscal year 2012. A positive change in the Kihon Checklist indicated deterioration in the Kihon Checklist score, whereas a negative change indicated no deterioration.

Chapter 2 Study 1

The Kihon Checklist and outcomes in the community-dwelling elderly -the risk of "new

occurrences of long-term care" and "all-cause mortality"-

I. Purpose

The purpose of this study was to clarify the relation between each domain of the Kihon Checklist and the new occurrences of long-term care and all-cause mortality in the community-dwelling elderly.

II. Participants and Methods

Handwritten questionnaires were distributed in 2012, including the Kihon Checklist among the elderly. We analyzed the data of 20,747 individuals in terms of the relationship between the new occurrences of long-term care in 2015–2017 and each domain of the Kihon Checklist. We analyzed the data of 22,021 individuals in terms of the relationship between all-cause mortality in 2015–2017 and each domain of the Kihon Checklist.

For the analysis method, hazard ratios (HR) were calculated using Cox proportional hazards analysis.

Ⅲ. Results

“Physical function,” “nutrition,” “cognitive function,” and “depressive mood” were significantly associated with new certification of needed long-term care. “Physical function,” “homebound state,” and “cognitive function” were significantly associated with all-cause mortality.

Ⅳ. Discussion

Each domain of the Kihon Checklist is useful for predicting the outcome of in the community-dwelling elderly, and we believe that its continuous use is necessary. It is necessary to prevent early decline in the "physical function" and "cognitive function" domains of the Kihon Checklist.

Chapter 3 Study 2

The 2 Years Change of Kihon Checklist and the risk of “new occurrence of long-term care” and “all-cause mortality” in the community-dwelling elderly

I. Purpose

This study aimed to examine whether changes in each domain of the Kihon Checklist over a two-year period among community-dwelling elderly people are risk factors associated with new certification for requiring long-term care and all-cause mortality three years later.

II. Participants and Methods

Printed questionnaires were distributed in 2012 and 2014, including the Kihon Checklist

among the elderly. The scores in each domain of the checklist in 2012 were subtracted from those in 2014, defined as "deterioration in Kihon Checklist score." We analyzed the data of 11,174 individuals in terms of the relationship between new occurrences of long-term care in 2015–2017 and each domain of the Kihon Checklist. We analyzed the data of 11,769 individuals in terms of the relationship between all-cause mortality in 2015–2017 and each domain of the Kihon Checklist. For the analysis method, hazard ratios (HR) were calculated using Cox proportional hazards analysis.

Ⅲ. Results

"Physical function deterioration," "nutrition deterioration," "homebound state deterioration," "cognitive function deterioration," and "depressive mood" were significantly associated with new certification of needed long-term care. "Nutrition deterioration," and "homebound state deterioration" were significantly associated with all-cause mortality.

Ⅳ. Discussion

The Kihon Checklist must be used continually to monitor progress over the medium term. Especially, changes in the Kihon Checklist for “nutrition deterioration” and “homebound state deterioration” should be monitored, taking into consideration their association with not only the need for nursing care but also all-cause mortality.

Chapter 4: Study 3

Effectiveness of participation in prevention projects in the community-dwelling elderly : Propensity score matching using the Kihon Checklist-

I. Purpose

This study aimed to examine the effects of long-term care prevention on the outcomes of community-dwelling elderly adults by analyzing whether their participation in long-term care prevention projects affects their outcomes of needing long-term care and all-cause mortality through propensity score matching using the Kihon Checklist.

II. Participants and Methods

A total of 47,031 older people living in the community who responded to the Kihon Checklist in 2013 and 2014 were included in the study. Logistic regression analysis was conducted with the presence or absence of participation in long-term care prevention projects as the objective variable, and age, sex, and the relevant domain of the Kihon Checklist as the independent variables. The trend scores were calculated and matched for each prevention

project. The number of subjects for analysis was 988 (494 primary prevention project participants and 494 non-participants) for the study of new certification for the need for nursing care in primary prevention, and 1,126 (563 primary prevention project participants and 563 non-participants) for the study of all-cause mortality. In the examination of new certification for the need for nursing care in the secondary prevention program, 694 persons (347 participants and 347 non-participants) were considered; for the study of all-cause mortality, the number of persons was 714 (357 participants and 357 non-participants). For the analysis method, hazard ratios (HR) were calculated using Cox proportional hazards analysis.

Ⅲ. Results

In the study of new certification for need for care in the secondary prevention program, participation in the secondary prevention program was a significant risk for new certification.

Ⅳ.Discussion

Regarding the effects of secondary prevention programs, many of the subjects of secondary prevention projects tended to report the same or worse functioning. It is difficult to link functional improvements, such as motor function, directly to improvements in Activity of Daily Living, Instrumental Activities of Daily Living, and other life functions. Therefore, it is important for long-term care prevention to link these improvements to participation in roles and social activities. Effective encouragement and support should be provided for older adults to continue practicing preventive behaviors and engaging in social roles. In addition, by participating in preventive projects, participants have easier access to social resources and are more likely to apply for long-term care insurance certification. Underutilization of home care services has been suggested to occur frequently among those certified as requiring long-term care. Under-application for long-term care insurance may also occur.

Chapter 5: General Discussion and Conclusion

Medical advances have extended life expectancy and the prognosis of each cause of death, to which the contribution of disease has decreased. Some domains of the Kihon Checklist, which are also useful as prognostic indicators of all-cause mortality, can be used to predict the loss of healthy life expectancy over the medium to long term for older people living in the community. Therefore, parts of the Kihon Checklist, which is also useful as a prognostic indicator for all-cause mortality, can be used as evaluation indicators for a wide range of outcomes, from primary to tertiary prevention, in the long term. In addition, it is desirable to use the Kihon Checklist as a continuous evaluation indicator rather than as a one-time

evaluation for predicting outcomes. As for the effect of the secondary prevention project on the quality of life of older people living in the community, which is the essence of long-term care prevention, projects can be identified as having a long-term care prevention effect when they connect high-risk subjects, who were already likely to be certified as requiring long-term care, to applications for long-term care insurance. Therefore, the studies suggested that the continuous use of the Kihon Checklist is useful for the early prevention of deterioration requiring nursing care and for a broad evaluation of the loss of healthy life span, from the need for nursing care to all-cause mortality.