Reducing risk events using case-mix system in geriatric facilities

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Introduction
Frequency of undesirable risk events, such as fall, aspiration pneumonia and pressure ulcer are considered as quality indicators in geriatric care facility. This study analyzed the effect of the standard risk management process and of staffing of a risk manager on prevention of risk events such as falls, aspiration pneumonia, and pressure ulcers. Case-mix classification system was also used to select high risk patient, and analyzed the effect of risk reduction.

Methods

Subject
767 elderly persons using geriatric rehabilitation facilities (Roken) in Japan were recruited from 116 facilities. All elderly persons or their family member as proxy provided written informed consent.

Outcome measures
Two types of outcome measures were used in analysis; A. Process outcome and B. Personal outcome.
A. Process outcome includes such as
1. Full implementation of R4 system (care plan method considered for risk management),
2. Use of standard "Risk manual booklet",
3. Briefing on risks for elderly people at the time of admission,
4. Implementation of risk management measures at the time of care planning.
B. Personal outcome includes reduction of risk events such as falls, aspiration pneumonia, pressure ulcers and dehydration.

Analysis
A standardized intervention of risk-management process was in place in 45 facilities. 66 facilities had risk-manager positions. Therefore these risk-management process and risk-manager positions are considered an intervention at facility level in this study. In addition, ICF staging: a case-mix tool using International Classification of Functioning, Disability and Health (ICF) and the past history of risk events are used as personal factor. Effect of intervention and case-mix classification on improvement of process and personal outcome was analyzed.

Results
Facilities with risk managers and facilities following risk management processes provided better quality of service in terms of risk management for elderly people on the analysis of process outcome.
1. Facilities with risk manager(s) scored better than facilities without risk manager in all of the following including "fully implementing R4 system" (odds ratio= with risk manager 1.5, without risk manager 0.10), "using standard "Risk manual booklet" (odds ratio=2.26 with risk manager, 0.53 without risk manager), and "implementing risk management measures at the time of care planning" (odds ratio= 0.85 with RM, 0.53 without risk manager).

2. Facilities following standard risk management processes (intervention group) scored better than facilities not following standard risk management processes in all of the following including "fully implementing R4 system" (odds ratio=intervention 2.52, non-intervention 0.08), "using " Risk manual booklet" (odds ratio= intervention 1.48, non-intervention 0.74)

3. However we could not observe reductions in personal outcomes such as number of falls, aspiration pneumonia or pressure ulcers as a result of intervention in this study when all patients were included. For
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example,
A. Decrease of fall events were observed in the patients with "past history of fall" and ICF staging mobility level = "3 and 4", (odds ratio= intervention 1.16; non-intervention 0.82).
B. Decrease of aspiration pneumonia were observed in patients with "past history of aspiration pneumonia" and ICF staging swallowing level= "2 and 3", (odds ratio= intervention 1.21; non-intervention 0.82).

Conclusions
Implementation of standardized risk prevention tool and of staffing of risk-manager improved the risk management process. Although the risk prevention process was improved, reduction of risk events was not observed when all patients were included. However, frequency of risk events was decreased after selecting high risk patients using case-mix method. This indicated the importance of specific risk prevention measures taking patients functioning and activity into consideration. Therefore, this study indicated the importance of case-mix system to reduce risk events and to improve quality of care in geriatric care facilities.

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