Abstract: Urinary incontinence and falls are serious problem among elderly people, because of restriction of the Activities of Daily Living (ADL) and Quality of Life. Previous studies have examined the association between urinary incontinence and falls. However, results have been inconsistent. In Japan, with the rapid aging of the society, the number of elderly women who have urinary incontinence and are at risk of falling is increasing. We investigated the relationship between type of urinary incontinence and risk of falls among elderly users of day-care services in a long-term care system. Our study population comprised 118 ambulatory women. At baseline, we evaluated incontinent status, lower extremity muscle strength, balance ability, ADL, and Instrumental ADL. We asked subjects about number of falls every 4 months during a year. In univariate analysis, lower extremity muscle strength ($p=0.001$) and mixed incontinence ($p=0.050$) differed significantly according to the fall status. Stress and urge incontinence were not significantly associated with falls. In logistic regression analysis, subjects who had mixed incontinence were 3.05 (95% confidence interval 1.01-10.2) times more likely to fall than those without. These results suggest that mixed incontinence have independent associations with falls. Incontinent status should be considered to prevent falls among elderly persons who are partially dependent and need support. J. Med. Invest. 52 : 165-171, August, 2005

Keywords: urinary incontinence, falls, aged, risk assessment
Study subjects

The study subjects were recruited from the community and were aged 60 years or older. A total of 100 participants were included, with 50 in the incontinence group and 50 in the control group. The inclusion criteria were as follows: (1) aged 60 years or older, (2) able to understand and complete the study procedures, and (3) no history of cognitive impairment or communication disorders.

Baseline assessments

Baseline assessments were conducted to evaluate the baseline characteristics of the study participants. These assessments included the Mini-Mental State Examination (MMSE) and the Activities of Daily Living (ADL) measurement. The MMSE is a widely used short screening test for cognitive function that consists of 11 questions assessing various cognitive domains. The ADL measurement included eight items: dressing, bathing, grooming, eating, toileting, transferring, walking, and using the toilet.

ADL and IADL measurements

ADL and Instrumental Activities of Daily Living (IADL) measurements were conducted to assess the participants' functional abilities. ADL assesses basic self-care activities, while IADL assesses more complex activities such as managing medications, using the telephone, and doing housework. The ADL measurement included eight items: dressing, bathing, grooming, eating, toileting, transferring, walking, and using the toilet. The IADL measurement included five items: managing medications, using the telephone, doing housework, handling finances, and using the telephone.

Urinary incontinence

Urinary incontinence was assessed using the Incontinence Impact Questionnaire (IIQ-7). The IIQ-7 is a valid and reliable measure that assesses the impact of urinary incontinence on the individual's social, functional, and emotional well-being. The questionnaire consists of seven items assessing various domains such as embarrassment, depression, and self-esteem.
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<table>
<thead>
<tr>
<th>Reference</th>
<th>Pure stress</th>
<th>Pure urge</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 67</td>
<td>n = 5</td>
<td>n = 26</td>
<td>n = 20</td>
</tr>
</tbody>
</table>

Odds Ratio of Falls

\[ \rho = 0.056 \]

- **Reference**: 1.00
- **Pure stress**: 1.16
- **Pure urge**: 0.63
- **Mixed**: 3.05

This table shows the odds ratio of falls in different stress conditions. The reference group is compared with pure stress, pure urge, and mixed stress conditions. The p-value of 0.056 indicates the statistical significance of the observed differences.