

# Predictors of old-age–home placement in Hong Kong Chinese elderly persons after hip fracture

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## ABSTRACT

**Objectives.** To identify predictors of institutionalisation among Hong Kong Chinese elderly persons after hip fracture.

**Methods.** This was a prospective observational study. Chinese elderly persons who sustained a hip fracture and who were residing at home prior to hospital admission were eligible. The study period was between 18 November 2003 and 17 April 2004. Univariate analysis was performed to identify factors associated with institutionalisation. Multivariate logistic regression was used to determine predictors of institutionalisation from the selected variables, including: age, marital status, living conditions, cognitive function, mobility, as well as an ability to perform basic and instrumental activities of daily living.

**Results.** Twenty-six (24%) of 109 patients were discharged to an old-age home. Older age, dementia, low mental and mobility scores, and low basic and instrumental activities of daily living scores were associated with institutionalisation. The risk increased 1.6-fold for every 10-year increase in age. The most significant predictor of institutionalisation was living alone (odds ratio=6.19; 95% confidence interval, 1.52-25.1). Higher Lawton (instrumental activities of daily living) and mental scores measured at baseline were protective against institutionalisation (odds ratio, 95% confidence interval: 0.48, 0.26-0.88 and 0.79, 0.64-0.98, respectively).

**Conclusion.** A number of patient factors were found to be predictors of institutionalisation after hip fracture. Future studies should investigate the caregiver side, in order to have a more comprehensive assessment on the need for institutionalisation.

**Key words:** Aged; Hip fractures; Homes for the aged; Institutionalization; Nursing homes

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## INTRODUCTION

Geriatric hip fracture (or fracture of neck of femur) causes significant health and health care problems in Hong Kong and elsewhere. In 1995, hip fracture rates in Hong Kong were 11 per 1000 in women and 5 per 1000 in men who aged 70 years and older, and in the future the total number of patients with such fractures is expected to increase substantially.<sup>1</sup> According to the report by World Health Organization, hip fracture is the most detrimental

fracture, associated with 20% mortality and 50% permanent loss in function.<sup>2</sup> Among survivors, it often results in an increased likelihood of long-term placement in a residential care home.<sup>3,4</sup> The risk of institutionalisation after hip fracture is high, being about five times that of persons of similar age and sex from the same community not have this fracture.<sup>5</sup> Poor cognitive function,<sup>6-9</sup> older age,<sup>6,7</sup> lower post-fracture physical function,<sup>6</sup> reduced pre-injury mobility,<sup>10</sup> impaired ability to perform activities of daily living,<sup>7</sup> and being unmarried<sup>8</sup> are reported to

be risk factors (predictors) of institutionalisation. These studies were all from western countries. A Hong Kong study is needed to explore whether the local population manifests different characteristics, whether for socio-demographic or cultural reasons. Local studies reported the outcome of hip fractures in the elderly population in 1993,<sup>11</sup> 1997,<sup>12</sup> and 2004,<sup>13</sup> the last of which also reported the risk factors of institutionalisation in elderly hip fracture victims in Hong Kong. However, that study was confined to highly selected patients in an orthogeriatric ward, apart from being a retrospective case-note review. It therefore posed difficulties in terms of generalising the results to the wider population. Consideration of risk factors at the time of admission to hospital is important for both the patient and family, so as to allow ample time to plan and arrange the discharge destination. This also facilitates early and appropriate referral to a medical social worker, whenever information on community services or old-age homes is needed.

The objective of this study was to determine the predictors of old-age-home placement after hip fracture among community-dwelling Chinese elderly persons in Hong Kong.

## METHODS

### Patients

All Hong Kong Chinese elderly persons (aged  $\geq 65$  years) residing at home before sustaining a fractured neck of femur, who were transferred from Queen Mary Hospital (QMH) to rehabilitation hospitals during the period 18 November 2003 to 17 April 2004, were enrolled in this study. The QMH is an acute teaching hospital (8.3% of the elderly population in Hong Kong live within its catchment area), and the rehabilitation hospitals were the Fung Yiu King Hospital and MacLehose Medical Rehabilitation Centre. Fractured neck of femur was defined by the principal diagnostic code starting with 820 on the discharge note from QMH, coded according to the International Classification of Diseases, 9th Revision, Clinical Modification Code System. Exclusion criteria were: race other than Chinese and a principal diagnostic code not starting with 820. This was a prospective observational study approved by the Institutional Review Board of the University of Hong Kong/Hospital Authority (Hong Kong West Cluster). Written informed consent was obtained from the

patients or their proxy-carers.

### Baseline assessment

The following information was gathered in the pre-designed data collection form.

#### *Socio-demographic data*

Socio-demographic data included: age, gender, marital status, education level (primary, secondary, and tertiary levels), living conditions (living alone vs with family), recipient of Comprehensive Social Security Assistance, social support (someone to rely upon for help when needed<sup>14</sup>), presence of a caregiver and their relationship with the patient. A caregiver was defined as a person responsible for attending to the needs of a dependent adult,<sup>15</sup> and could be the spouse, child, child-in-law, other relatives, friend, or a domestic helper. Presence of a caregiver does not necessarily mean that he/she was living with the patient. Thus, a subject living alone could still have someone responsible for attending to his/her needs (i.e. a caregiver).

#### *Comorbidities*

Comorbidities included the number and type of comorbid diseases, particularly dementia, old hip fracture, and stroke.

#### *Information about hip fracture and surgery*

Information collected included the type of hip fracture, the time from fracture to operation, and details of any postoperative clinical events. For this study, a postoperative clinical event was defined as any medical or surgical event, resulting in a medical or surgical intervention during the course of the entire hospital stay following the hip operation.

#### *Functional status (mobility function, activities of daily living, and mental function)*

The mobility function on admission to the rehabilitation hospital and upon discharge from the same was assessed by qualified physiotherapists using the Elderly Mobility Scale (EMS). The Scale has been validated and has good inter-rater reliability to measure mobility of hospitalised elderly people.<sup>16</sup> The basic and instrumental activities of daily living were rated by qualified occupational therapists using the Barthel Index (BI<sup>17</sup>) and the Lawton Instrumental Activities of Daily Living scale (Lawton IADL scale<sup>18</sup>), respectively. The BI is a valid measure of disability.<sup>19</sup>

The Lawton IADL scale has been validated in Hong Kong, and shown to be reliable for assessing an older person's ability to live independently in the community.<sup>20</sup> Mental function was assessed by a geriatric nurse, employing the Abbreviated Mental Test (AMT), Hong Kong version.<sup>21</sup> This test has also been validated in our Chinese elderly population and a cut-off value of 6/7 differentiates between cognitively intact and cognitively impaired individuals.<sup>21</sup>

### ***Length of stay in hospital***

Length of stay in the acute and rehabilitation hospitals was recorded in days; such information being obtained reliably from the hospital electronic record system.

### ***Discharge destination/endpoint of study***

The destination on discharge from rehabilitation hospitals was documented in the case notes by a nurse. The subject could be discharged back home or to an old-age home, newly arranged by the caregiver. 'Back home' in the current study includes both the original home from where the subject came and the home of the subject's family or other caregiver. An old-age home in the current study refers to either a private or a government-subsidised old-age home. Institutionalisation is defined as an entry into an old-age home, upon discharge from hospital.

### **Sample size calculation**

From a pilot study, an effect size of 0.90 was found to demonstrate the difference of variables between the groups discharged to an old-age home or back home on a *t* test. Using the Gpower statistical package<sup>22</sup> and the effect size of the pilot study, a minimum of 21 in the institutionalised group was deemed to be adequate to give a level of significance of 0.05 and statistical power of 80%. As 19.7% of the pilot sample was discharged to an old-age home, the expected sample size for the current study was estimated to be 106, calculated using the equation:  $21 \times 100 / 19.7$ .

### **Statistical analysis**

Descriptive analyses for all variables were first performed. Univariate analysis comparing all patients discharged to an old-age home with those discharged back home was employed for all variables chosen a priori. These variables were selected based on the

literature<sup>6-9,23</sup> and the pilot study. Student *t* tests were used for continuous variables. The chi-square statistic or Fisher's exact test were used for categorical data. A backward stepwise logistic regression model was used to identify independent risk factors for institutionalisation. Baseline variables obtained on admission with a *p* value of less than 0.2 were entered into the logistic regression model, so as to identify the corresponding independent predictors.

A tree-based classification analysis<sup>24</sup> was used to predict the risk of institutionalisation after hip fracture in the study group. The process involved successively finding the best variable by which to divide subgroups into those more or less likely to be discharged to an old-age home. The variables chosen were derived from the multivariate logistic regression model that generated the independent predictors of institutionalisation on admission to a rehabilitation hospital.

A *p* value of less than 0.05 was regarded as statistically significant. The Statistical Package for the Social Sciences (Windows version 11.5; SPSS Inc, Chicago [IL], US) was employed for statistical analyses.

## **RESULTS**

### **Patients transferred from an acute hospital to a rehabilitation hospital**

During the 5-month period of study, 120 patients were transferred from the acute hospital to the rehabilitation hospitals. Among them, four died, one was transferred to another hospital for another medical reason, two were still in a rehabilitation hospital, and four did not consent to join the study. Thus, eventually, 109 patients were eligible for subsequent detailed analysis.

### **Comparison of patients discharged to an old-age home and those discharged back home from a rehabilitation hospital**

#### ***Socio-demographic features***

Among the 109 patients discharged from rehabilitation hospitals, 26 (24%) entered an old-age home. Compared to those discharged home, patients entering an old-age home were older (mean±standard deviation [SD]: 85±8 years vs 81±7 years; *p*=0.036)

**TABLE 1**  
**Univariate analysis of socio-demographic features, comorbidities, and type of hip fracture and surgery among patients discharged home and to old-age homes**

| Variable                                 | Mean±SD or %           |                                      | p Value |
|--|------------------------|--------------------------------------|---------|
|  | Discharged home (n=83) | Discharged to an old-age home (n=26) |         |
| Age (years)                              | 81±7                   | 85±8                                 | 0.036   |
| Gender (female)                          | 66%                    | 81%                                  | 0.222   |
| Married                                  | 41%                    | 27%                                  | 0.197   |
| Living alone                             | 15%                    | 27%                                  | 0.144   |
| Social support available                 | 94%                    | 92%                                  | 0.671   |
| Caregiver available                      | 94%                    | 92%                                  | 0.671   |
| Illiterate                               | 49%                    | 58%                                  | 0.460   |
| Receiving CSSA*                          | 18%                    | 23%                                  | 0.591   |
| No. of comorbid diseases                 | 2.4±1.6                | 2.4±1.8                              | 0.894   |
| Dementia                                 | 4%                     | 27%                                  | 0.002   |
| Stroke                                   | 17%                    | 27%                                  | 0.257   |
| Prior hip fracture                       | 12%                    | 4%                                   | 0.454   |
| Surgery done for hip fracture            | 98%                    | 96%                                  | 0.562   |
| Time from hip fracture to surgery (days) | 7±7                    | 8±7                                  | 0.600   |
| Intracapsular fracture                   | 49%                    | 35%                                  | 0.187   |
| Left-sided fracture                      | 46%                    | 50%                                  | 0.707   |
| No. of postoperative clinical events     | 0.8±1.1                | 1.1±1.1                              | 0.186   |

\* CSSA denotes Comprehensive Social Security Assistance

**TABLE 2**  
**Risk of institutionalisation with increasing age in elderly subjects after hip fracture\***

| Age-group (years) | No. of subjects | No. (%) of subjects discharged to an old-age home |
|-------------------|-----------------|---|
| 65-74             | 19              | 2 (11%)   |
| 75-84             | 51              | 9 (18%)   |
| 85-94             | 32              | 11 (34%)  |
| 95-104            | 7               | 4 (57%)   |
| <b>65-104</b>     | <b>109</b>      | <b>26 (24%)</b>                                   |

\* Chi-square for trend: chi-square value=8.702; degrees of freedom=3; p=0.034

[TABLE 1]. The risk of institutionalisation increased with age (TABLE 2); being 11% for patients aged 65-74 years, 18% for those aged 75-84 years, 34% for those aged 85-94 years, and 57% for persons aged 95-104 years. The risk increased by about 1.7 to 2.0 fold with every decade. The chi-square test for the trend was statistically significant (chi-square value=8.702, degrees of freedom=3, p=0.034). A higher proportion of those discharged to old-age homes lived alone before hospital admission compared to those going home (27% vs 15%; p=0.144). There was no statistical

difference in gender, marital status, social support, education level, and financial assistance between the two groups.

#### **Comorbidities**

In all, 27% of those discharged to an old-age home had a prior history of dementia, compared to only 4% of those discharged back home (p=0.002). There was no statistically significant difference noted in terms of other diseases, such as stroke or prior hip fracture (TABLE 1).

**TABLE 3**  
**Univariate analysis of functional status on admission and upon discharge in the rehabilitation hospital and length of stay in hospital**

| Variable*                           | Mean±SD or %           |                                      | p Value |
|-------------------------------------|------------------------|--------------------------------------|---------|
|                                     | Discharged home (n=83) | Discharged to an old-age home (n=26) |         |
| LOS (acute hospital), days          | 14±9                   | 16±10                                | 0.172   |
| LOS (rehabilitation hospital), days | 44±19                  | 56±28                                | 0.016   |
| Total hospital LOS, days            | 57±22                  | 72±29                                | 0.007   |
| EMS (admission), range 0-20         | 6±4                    | 4±3                                  | 0.014   |
| EMS (discharge), range 0-20         | 14±4                   | 10±5                                 | 0.001   |
| BI (admission), range 0-100         | 57±15                  | 43±20                                | <0.001  |
| BI (discharge), range 0-100         | 81±18                  | 59±28                                | 0.001   |
| Lawton score (admission), range 0-8 | 1.7±1.2                | 0.6±0.9                              | <0.001  |
| Lawton score (discharge), range 0-8 | 3.1±2.1                | 1.0±1.4                              | <0.001  |
| AMT score, range 0-10               | 7.4±2.4                | 4.7±3.1                              | <0.001  |
| Readmission to acute hospital       | 7%                     | 19%                                  | 0.128   |

\* LOS denotes length of stay, EMS Elderly Mobility Scale, BI Barthel Index, and AMT Abbreviated Mental Test

### ***Hip fracture and surgery***

There was no significant difference in the type of hip fracture and the mean time from hip fracture to surgery between the two groups. The majority of them did have surgery for their hip fracture (TABLE 1).

### ***Functional status***

#### **Mental function on admission to the rehabilitation hospital**

The AMT score was significantly lower in patients discharged to an old-age home (mean±SD: 4.7±3.1 vs 7.4±2.4;  $p<0.001$ ) [TABLE 3]. When a cut-off value of 6/7 was used, 40% of those with a low AMT score ( $\leq 6$ ) were discharged to an old-age home, while this ensued in 14% of those with a high AMT score of  $\geq 7$  ( $p=0.002$ ). When the cut-off value was 4/5, the corresponding figures were 58% and 14% respectively ( $p<0.001$ ).

#### **Mobility function on admission to and upon discharge from the rehabilitation hospital**

The mean EMS on admission in those discharged to an old-age home was lower than in those discharged home (mean±SD: 4±3 vs 6±4;  $p=0.014$ ). The EMS upon discharge was also significantly lower in the old-age-home group compared to the group going home (10±5 vs 14±4;  $p=0.001$ ) [TABLE 3].

#### **Activities of daily living on admission to and upon discharge from the rehabilitation hospital**

The BI (mean±SD) on admission and upon discharge

were 43±20 and 59±28 in the old-age-home group compared to 57±15 and 81±18 in the back-home group, respectively ( $p\leq 0.001$ ). The respective (mean±SD) Lawton scores on admission and upon discharge were 0.6±0.9 and 1.0±1.4 in the old-age-home group and 1.7±1.2 and 3.1±2.1 in those going home ( $p<0.001$ ) [TABLE 3].

### ***Length of stay in hospital***

There was no significant difference in the length of stay in the acute hospital between the old-age-home group and the group going home (mean±SD: 16±10 days vs 14±9 days respectively;  $p=0.172$ ). However, the stay in the rehabilitation hospital and the total length of hospital stay (acute + rehabilitation hospital) were much longer in the old-age-home group compared to those going home (56±28 vs 44±19 days with  $p=0.016$ , and 72±29 vs 57±22 days with  $p=0.007$ ) [TABLE 3].

### ***Logistic regression models***

According to the logistic regression model, living alone, and low Lawton and AMT scores on admission were all independent predictors of institutionalisation (TABLE 4).

### ***Tree-based classification analysis***

Since living alone and both the admission Lawton and AMT scores were found to be important predictors of institutionalisation, an attempt was made to estimate the probability of institutionalisation by referring to

**TABLE 4**  
**Multivariate baseline predictors of institutionalisation after hip fracture**

| Variable*                       | Odds ratio | 95% CI for odds ratio | p Value |
|---------------------------------|------------|-----------------------|---------|
| Living conditions               |            |                       |         |
| With family                     | 1.000      |                       |         |
| Alone                           | 6.190      | 1.524-25.140          | 0.011   |
| Lawton IADL score on admission† | 0.482      | 0.263-0.881           | 0.018   |
| AMT score on admission†         | 0.796      | 0.646-0.981           | 0.032   |

\* Variables inserted in the model included age, marital status, living condition, intracapsular fracture, Elderly Mobility Scale score on admission, Barthel Index score on admission, Lawton IADL score on admission and AMT score on admission; AMT denotes abbreviated mental test and IADL instrumental activities of daily living  
 † Lawton score and AMT score are continuous predictor variables. Since the ORs are less than 1, a low Lawton score and a low AMT score is associated with a higher odds of institutionalisation

these three parameters together. The Lawton score was categorised into high ( $\geq 2$ ) and low ( $\leq 1$ ) according to the median value. Having a low as opposed to high score on admission put a subject at a high risk of institutionalisation (23/57=40% vs 3/52=6%). There were 52 subjects who had high Lawton scores; 11 lived alone and 41 with a family. None (0%) of the 11 'live alone' group and only three (7%) of the 41 'live with family' group were institutionalised upon discharge. For those with low Lawton scores, eight lived alone and 49 with a family. Upon discharge, seven (88%) of the eight 'live alone' group, and 16 (33%) of the 49 'live with family' were institutionalised. For the latter group (those who had a low Lawton score and lived with a family), the risk of institutionalisation became 61% if they had a low AMT score ( $\leq 4$ ) on admission. An AMT with a cut-off value of 4/5 was used in this instance because the current study found that an AMT score of 4 or less would put an individual at high risk of institutionalisation. It was therefore selected to optimise the predictive properties of the model.

## DISCUSSION

Long-term institutionalisation occurred frequently in this prospectively followed up cohort of the Hong Kong Chinese elderly hip fracture patients. About one in four of the community-dwelling subjects who had a hip fracture moved to an institution upon discharge from a rehabilitation hospital. A local study in 1993 reported an increase of patients living in old-age facilities from 12% on admission to 28% upon discharge after hip fracture.<sup>11</sup> When compared to overseas data, the institutionalisation rate in the current study was double that reported by Cree and Nade<sup>7</sup> among Australian community subjects

in which only 12% were institutionalised upon discharge from hospital. However, the mean age of our patients was older than that in the Cree and Nade study<sup>7</sup> (82 years vs 75 years), while respective gender ratios were comparable (70% vs 71% were female). The difference in ages may therefore at least partly account for these differing institutionalisation rates.

The mean length of hospital stay in the current sample was 2 months. The institutionalisation rate at 2 months post-fracture could thus be regarded as 24%. Cree et al<sup>6</sup> reported a 3-month post-fracture institutionalisation rate of 17%, whereas Steiner et al<sup>8</sup> reported a 6-month post-fracture institutionalisation rate of 6 to 19% compared to a much higher rate of 29% reported by Marottoli et al.<sup>9</sup> The rate in this study was on average higher than that in reports from other countries.

From the univariate analysis, the current study identified increased age, and decreased cognitive status, activities of daily living (ADL) function and mobility function on admission and upon discharge as risk factors associated with increased institutionalisation among the elderly persons after hip fracture. This confirmed the results of prior studies.<sup>6-9,23</sup> Increasing risk of institutionalisation after hip fracture with increasing age was also reported in other studies.<sup>6,9</sup> However, this was the first report to show this effect among the Hong Kong Chinese elderly population. This study also showed that the commonly used mobility and ADL assessment scales (namely EMS, BI, and Lawton IADL scale) detected a significant difference between those discharged to an old-age home and those discharged home, whether carried out in the rehabilitation hospital on admission

or discharge. It is logical to think that subjects who subsequently moved to an old-age home would have lower functional scores upon discharge. Interestingly however, a relatively poor performance on mobility and both basic and higher ADL tasks on admission was also associated with institutionalisation after hip fracture.

In this study institutionalisation was associated with (i) prolonged total hospital stay (i.e. in both acute and rehabilitation hospitals) and (ii) prolonged stay in the rehabilitation hospital, but not in the acute hospital alone. This suggested that those discharged to an old-age home might (1) need more time for rehabilitation, (2) suffer more postoperative medical or surgical events resulting in longer stay in the rehabilitation hospital, and/or (3) have other non-medical reasons such as having to wait for placement. The fact that most of the admission functional scores (mobility and ADL functions) in the old-age-home group were lower than those in the group going home, suggested that the former group might require longer training course in the rehabilitation hospital to achieve a predefined goal. Postoperative pain, which was not documented in the current study, could also prolong rehabilitation through its effect on delayed ambulation.<sup>25</sup> According to the current study, patients discharged to an old-age home had more postoperative clinical events and more of them were transferred back to an acute hospital for further management. This too might have contributed to the longer total and rehabilitation hospital stays among the old-age-home group. Finally, social reasons and related factors accounting for longer hospital stays have also been well-reported in overseas studies.<sup>26,27</sup> In Hong Kong, an elderly person may apply for a government-subsidised elderly home for long-term residential care, if he/she is eligible (from loss of self-care ability). However, due to the long waiting list, it takes at least 22 months before a patient is actually assigned a place in such a government facility.<sup>28</sup> Private sector-run old-age homes are the usual alternative destinations when persons are discharged to residential care from hospitals in Hong Kong. The choice of old-age home is at the discretion of the caregiver or the family that bears the responsibility of locating a suitable old-age home. Discharge to a private old-age home may be delayed if there is a financial obstacle or lack of a place in a particular old-age home, or for other social reasons. The current study did not quantify the proportion

of hospital stays that were influenced by such non-medical or social reason. Nonetheless, the fact that social factors contribute to longer hospital stay should not be neglected. Both local<sup>29</sup> and overseas<sup>30</sup> studies have reported the effect of a multidisciplinary clinical pathway for reducing the length of hospital stay. These studies emphasise the importance of prompt referral to appropriate disciplines. Therefore, knowing the risks for institutionalisation when a patient is admitted to a rehabilitation hospital and prompt referral to a medical social worker may well facilitate earlier planning and arrangement of a discharge destination. Whether or not this approach can help to decrease the length of hospital stay in those subsequently discharged to old-age homes requires further research.

From the results of the multivariate logistic regression model, living alone, a low mental score, and a low IADL score predicted institutionalisation. Living alone<sup>23</sup> and mental status<sup>6,8,9,23</sup> as predictors for institutionalisation after hip fracture have been widely reported. The current results therefore conformed with such findings in western societies. Furthermore, they confirm that social and functional variables were important patient factors associated with institutionalisation. In real life situations, however, the need for institutionalisation depends not only on the patient's need of care, but also on the caregiver's needs. Potential caregiver factors include the availability of family manpower for caregiving at home and/or the ability to afford a domestic home-helper. Other relevant factors include: the caregiver's health status, relationship with the patient, and level of adherence to traditional Chinese cultural norms (in which the family bears the main responsibility caring for elders at home). The current study only addressed social support or caregiver availability. It did not focus on or evaluate other aspects pertaining to caregivers. Future studies need to explore caregiver attitudes and related factors, particularly their perceptions about institutionalisation.

The strengths of this study were its prospective design, use of semi-structured interviews and validated assessment tools, and sampling from two of 18 representative districts (covering 8% of the elderly people in Hong Kong). Moreover, it constitutes the first-ever reported series in a Chinese population. Our study was not without limitations. First, the elderly patients recruited were mainly from

only one region of Hong Kong. Second, some of the data (comorbid diseases and postoperative clinical events) were retrospectively retrieved from medical records. Third, the intra- or inter-rater reliabilities for the assessment of mental and physical function were not tested.

## CONCLUSION

The current study found that one in four of the Hong Kong Chinese elderly persons moved to an old-age home upon discharge from a rehabilitation hospital after sustaining a hip fracture. This rate was relatively higher than that reported in the western societies. As reported in western populations, this study found living alone and both low Lawton IADL and AMT scores on admission were predictors for institutionalisation after hip fracture. Knowing the living condition and assessment of cognitive and IADL function on admission may, to a certain extent, help to facilitate earlier planning and arrangements for a discharge destination. In future studies, other factors from the perspectives of the caregiver should be explored, in order to have a more comprehensive assessment of the need for institutionalisation after hip fracture.

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