Day hospital fall prevention programme for elderly people to reduce re-presentation with fall

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ABSTRACT

Purpose. To review the outcome of a day hospital (DH) fall prevention programme in terms of the rate of re-presentation with fall within 6 months and the reasons for dropout.

Methods. 115 patients aged 68 to 100 years who were medically stable and could benefit from the DH fall prevention programme were randomly selected. Of the 115 patients, 47 attended ≥2 sessions (completion group), 25 attended <2 sessions (non-completion group), and 43 were not referred (non-referral group). The decision to refer patients to the programme was made by the allied health team in the emergency department.

Results. For patients who were not referred to the DH fall prevention programme, the reasons were unclear (n=22), safe discharge without the need for follow-up (n=15), too frail or from a nursing home (n=4), and refusal to participate (n=2). The most common reason for dropout from the programme was lack of interest (n=20), frailty (n=2), not contactable (n=2), and mobility problem (n=1). The rate of re-presentation with falls within 6 months was lowest in the completion group, followed by the non-completion group and the non-referral group (17% vs. 36% vs. 47%, p=0.009); the difference was significant between the completion and non-referral groups (p=0.001), and between the completion and non-completion groups (p=0.05).

Conclusion. The DH fall prevention programme reduced the rate of re-presentation with fall within 6 months.

Key words: Accidental falls; Aged; Patient admission

INTRODUCTION

According to a US study, 30% to 40% of community-dwelling people older than 65 years fall each year,¹ and the rate is 50% for those older than 80 years.² Most non-fatal injuries in adults older than 65 years treated in emergency departments were due to falls.³ 20% to 30% of elderly fallers sustain moderate-to-severe injuries such as lacerations, hip fractures, and head traumas.⁴ Fall is the cause of most fractures in elderly people,⁵ and the most common fracture sites are spine, hip, forearm, leg, ankle, pelvis, upper arm, and wrist.⁶

In New South Wales, Australia, the average cost for a community-dwelling person older than 65 years to be treated in the emergency department secondary to fall-related injury is $3169.⁷ 58% of these patients require hospital admission at an average cost of $20 563 per admission.⁷ Two-thirds of these elderly fallers will experience another fall within 1 year.⁸
To reduce the number of fall presentations to the emergency department, fall prevention strategies such as exercise, gait training, vitamin D supplementation, environmental modification, eyesight correction, and medication rationalisation should be implemented.9,10

The day hospital (DH) programme11 provides multi-disciplinary assessment and rehabilitation in an ambulatory setting, and plays a pivotal role between hospital and home-based services.12 This model of care is beneficial for older patients. In a meta-analysis, patients who attended a DH had less functional deterioration, less use of hospital beds, and less use of institutional care than non-attendees.12,13 Referring elderly fallers to a DH enables improvement of gait and balance, physical performance, and fall rate.14,15 For $1 invested in the DH programme, the benefit to the health system is estimated to be $2.14 (95% confidence interval, $1.72-2.56).16

This study reviewed the outcome of a DH fall prevention programme in terms of the rate of re-presentation with fall within 6 months and the reasons for dropout.

MATERIALS AND METHODS

This study was approved by the South Western Sydney Local Health District Ethics Committee. Between 2011 and 2012, 4590 patients presented to the emergency department of Bankstown Hospital after falls. A convenience sample of 115 patients aged 68 to 100 years who were medically stable and could benefit from the DH fall prevention programme were randomly selected. Of the 115 patients, 47 attended ≥2 sessions (completion group), 25 attended <2 sessions (non-completion group), and 43 were not referred (non-referral group) [TABLE]. The decision to refer patients to the programme was made by the allied health team in the emergency department.

The emergency department re-presentation rates were compared between the 3 groups using the Kruskal-Wallis test, and between any 2 groups using

<table>
<thead>
<tr>
<th>Variable</th>
<th>Completion group (n=47)</th>
<th>Non-completion group (n=25)</th>
<th>Non-referral group (n=43)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean±SD age (years)</td>
<td>84±6</td>
<td>84±8</td>
<td>85±6</td>
<td>0.684</td>
</tr>
<tr>
<td>No. of males:females</td>
<td>21:26</td>
<td>7:18</td>
<td>11:32</td>
<td>0.125</td>
</tr>
<tr>
<td>Residence (no. of patients)</td>
<td></td>
<td></td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Home</td>
<td>46</td>
<td>22</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>3</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Comorbidities (% of patients)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>81</td>
<td>84</td>
<td>84</td>
<td>0.918</td>
</tr>
<tr>
<td>Haematology</td>
<td>2</td>
<td>12</td>
<td>5</td>
<td>0.196</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>19</td>
<td>16</td>
<td>16</td>
<td>0.918</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>28</td>
<td>20</td>
<td>35</td>
<td>0.416</td>
</tr>
<tr>
<td>Respiratory</td>
<td>38</td>
<td>28</td>
<td>16</td>
<td>0.067</td>
</tr>
<tr>
<td>Malignancy</td>
<td>64</td>
<td>52</td>
<td>61</td>
<td>0.620</td>
</tr>
<tr>
<td>Neurological</td>
<td>53</td>
<td>48</td>
<td>61</td>
<td>0.585</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>51</td>
<td>52</td>
<td>54</td>
<td>0.974</td>
</tr>
<tr>
<td>Rheumatology</td>
<td>45</td>
<td>40</td>
<td>42</td>
<td>0.922</td>
</tr>
<tr>
<td>Renal</td>
<td>6</td>
<td>16</td>
<td>26</td>
<td>0.044</td>
</tr>
<tr>
<td>Known fall history (no. [%] of patients)</td>
<td>35 (74)</td>
<td>16 (64)</td>
<td>27 (63)</td>
<td>0.445</td>
</tr>
<tr>
<td>Re-presentation with fall within 6 months (no. [%] of patients)</td>
<td>8 (17)</td>
<td>9 (36)</td>
<td>20 (47)</td>
<td>0.009</td>
</tr>
<tr>
<td>No. of falls (no. of patients)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>5</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>≥3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
the Mann-Whitney U test. Pearson Chi-squared test was used to determine the significance of categorical data. A p value of <0.05 was considered statistically significant.

Day Hospital of the Department of Aged Care and Rehabilitation of Bankstown Hospital received 75 to 80 referrals/month, of which about 40 were elderly patients who had sustained falls and referred from the emergency department. The other sources of referral were the community aged care assessment team, general practitioners, outpatient departments, and inpatient medical teams. The DH staff consisted of 1 full-time manager, 1 full-time registered nurse, 2.9 full-time equivalent (FTE) physiotherapists, 1 full-time occupational therapist, 0.8 FTE speech pathologist, 1 full-time social worker, 0.57 FTE dietician, and 0.53 FTE clinical psychologist.

The DH fall prevention programme—“Able and Stable”—was a 10-week multi-disciplinary programme of education and exercise for fall patients. It involved one-to-one sessions with relevant allied health staff, medical review by a geriatrician, fall-specific education and exercise by a physiotherapist and occupational therapist, and access to other allied health services (dietician, clinical psychologist, and podiatrist) as required.

A weekly physiotherapy session usually consisted of gait and balance training, lower limb strengthening, and fall-specific education. The strength and intensity of the training were tailored to the physical status of each patient, and gradually increased as the patient progressed. Patients were required to attend up to 6 sessions to complete the programme.

A 6-week home exercise programme of a minimum of 20 minutes/day up to 3 times/week was given. To ensure compliance, an exercise diary was checked during the weekly session. The physiotherapist also made a weekly phone call to ensure compliance and provide encouragement.

Occupational therapy intervention was tailored to individual needs. A home visit was made to review the home environment. Recommendations were made to modify the environment to improve function and safety; fall prevention education was provided.

Group education sessions for patients and their carers were provided, including fall prevention strategies, carer support groups, and dementia information sessions. Up to 100 to 130 sessions/month were provided.

RESULTS

For patients who were not referred to the DH fall prevention programme, the reasons were unclear (n=22), safe discharge without the need for follow-up (n=15), too frail or from a nursing home (n=4), and refusal to participate (n=2). The most common reason for dropout from the programme was lack of interest (n=20), frailty (n=2), not contactable (n=2), and mobility problem (n=1).

The mean ages of patients in the 3 groups were comparable (p=0.684). In all 3 groups, more women than men had falls (as women have longer life expectancy), which is consistent with data from the Australian Bureau of Statistics. Most patients were living at home by themselves or with family members, rather than living in a hostel or nursing home (p=0.001). Comorbidities of the 3 groups were comparable, with cardiovascular disease being the most frequent.

Most patients were at risk of falls before the programme. The rate of re-presentation with falls within 6 months was lowest in the completion group, followed by the non-completion group and non-referral group (17% vs. 36% vs. 47%, p=0.009, Table); the difference was significant between the completion and non-referral groups (p=0.001), and between the completion and non-completion groups (p=0.05).

DISCUSSION

The DH fall prevention programme reduces the number of repeat falls because it provides a ‘one-stop approach’ for complex interventions by different members of the allied health team. The risk factors of falls among elderly people are previous fall in the past year and abnormal gait/balance. Without any intervention, these patients are likely to re-present with a fall within 6 months. The programme reduces the rate of re-presentation with fall within 6 months, thus saving health care costs. Patients may have better quality of life owing to improved mobility and functional status, and reduced ‘fear of falling’.

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It is important to educate patients about the importance of completing the DH fall prevention programme, as most dropouts were due to lack of interest. When the programme is completed, 88% of patients and 96% of carers are satisfied with the outcome.21

General practitioners should be familiarised with the programme and monitor their patients to complete the programme and refer those with a high fall risk to the programme to avoid hospital presentation. A Belgian study has shown that some general practitioners are unsure about the role of the DH and consider it to be a threat to their practice.22

It is useful to provide guidelines to the emergency department staff for elderly people who present with a fall. The staff should be aware that most elderly fallers are at risk of recurrent falls and need follow-up after discharge.

This study has some limitations. The sample size of 115 was small, as it was a pilot study. More patients in the non-referral group were living in the hostel/nursing home and were physically frailer than in the other groups. This might have led to referral bias and invalid comparison. Some patients might have represented elsewhere, but this chance was small and unlikely to affect the significance of the results. Some patients might have had recurrent falls but did not present to the emergency department or they might have developed a fear of fall and become housebound. About half of the non-referral group were not referred to the DH fall prevention programme for unclear reasons. These patients might have been too frail and had severe cognitive impairment, or were independent and needed no further intervention. This study was retrospective and not randomised and controlled, and some information might not have been clearly documented, possibly leading to biases. Further prospective studies are needed.

CONCLUSION

The DH fall prevention programme reduced the rate of re-presentation with fall within 6 months. Emergency department staff should be familiarised with the programme and provided with guidelines for referring suitable patients to the programme.

REFERENCES