Are people with lower limb amputation changing? A seven-year analysis of patient characteristics at admission to inpatient rehabilitation and at discharge

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Abstract

Purpose: What are the characteristics of people with lower limb amputation at admission to, and discharge from, subacute rehabilitation? Have these characteristics changed over time?

Methods: 425 lower limb amputation inpatient rehabilitation admissions (335 individuals) from 2005 to 2011 were examined. Admission characteristics, including aetiology, gender, age, amputation level, cognition (Mini-Mental State Examination), indoor mobility aid, motor function (Functional Independence Measure motor subscale) and number and type of comorbidities, and discharge characteristics, including prosthetic prescription, motor function, discharge mobility aid and destination were compared by admission date and year.

Results: Proportion of people with lower limb amputation with nonvascular aetiology increased over time (2004, 15% to 2011, 24%) ($ß=-181.836$, $p<0.001$). Admission cognition increased over time ($ß=9.296$, $p<0.001$). Motor function worsened over time; median admission (IQR) Functional Independence Measure motor 70 (59-77) in 2005 to 67 (51.5-73.25) in 2011 ($ß=-1.937$, $p<0.001$) and discharge from 81 in 2005 to 79 in 2011 ($ß=-1.267$, $p<0.001$). Prosthetic prescription rates were highest in 2005 (68%) decreasing to 47% in 2010 ($ß=-200.473$, $p<0.001$).

Conclusion: Total numbers of people with lower limb amputation did not change over the seven-year study period. Changes were observed in aetiology, cognition and motor function. Prosthetic prescription rates decreased over time.

Key Words: Amputation; lower limb; inpatient; rehabilitation; patient characteristics

Introduction

Lower limb amputations are most commonly a consequence of dysvascular conditions associated with diabetes [1]. The number of lower limb amputations is expected to rise internationally [2], due to an ageing population [3] and an increase in other risk factors such as sedentary lifestyle, poor diet and obesity [4]. People with lower limb amputation who receive subacute inpatient rehabilitation (at a facility that aims to restore independent mobility and optimise community integration following discharge) have better outcomes such as reduced mortality, fewer subsequent amputations, better prosthetic acquisition, and greater medical stability, than if discharged home immediately following acute care [5]. However, inpatient rehabilitation is costly [6]. Despite the expected increase in lower limb amputations and significant healthcare costs related to this population, it is not known how the characteristics of people with lower limb amputation undergoing subacute inpatient rehabilitation may be changing over time, and if these changes reflect predictions for this population.

This investigation addresses three aims in a cohort of patients admitted for subacute inpatient rehabilitation following lower limb amputation: 1) To describe patient characteristics at admission to, and discharge from, subacute inpatient rehabilitation over a seven-year period; 2) To examine whether these patient characteristics were associated with admission date during the seven-year period, and 3) To explore changes in patient characteristics across the seven-year period.

Methods

Design

A cohort investigation was performed with two assessment points per patient: 1. at admission to a subacute rehabilitation unit; 2. immediately prior to discharge from this unit.

Setting and participants

Patients were eligible for inclusion if they were 18 years or older and admitted for subacute inpatient rehabilitation at Princess Alexandra Hospital, Brisbane, Australia, following a new major lower limb amputation between January 2005 and December 2011. Princess Alexandra Hospital is the largest tertiary hospital in Metro South Hospital and Health Service, situated in the southeast corner of Queensland, Australia. This hospital performed 21% of all lower limb amputations in Queensland during 2006-7 [7], with the majority receiving onsite subacute inpatient rehabilitation. Major lower limb amputation was defined as amputation above the ankle; including transtibial, knee disarticulation, transfemoral or hip disarticulations. Patients were excluded if they were admitted for rehabilitation for a medical and/or surgical reason with a comorbidity of lower limb amputation. The rehabilitation admission criteria remained constant throughout the study. Local hospital and university institutional human research ethics committees approved this study.

Outcome Measures

Admission characteristics are shown in Table 1 and included aetiology, gender, age, amputation side, amputation level, cognitive function (measured by Mini-Mental State Examination (MMSE)), prior mobility aid indoors, motor function (the motor subscale of the Functional Independence Measure (FIM-Motor)) and comorbidities. Discharge characteristics (outlined in Table 2) included length of stay, prosthetic prescription, FIM-Motor, discharge mobility aid and discharge destination.

The MMSE [8] was administered by the ward occupational therapist as part of usual practice on admission. MMSE scores range between 0-30, with lower scores indicating poorer cognitive function, and scores <24 indicating cognitive impairment [9].

The FIM-Motor [10] includes thirteen motor items (for example, mobility, personal care, and sphincter control) and was administered by members of the multidisciplinary team. FIM-Motor scores for each item range from dependence (1) to independence (7) with a maximum motor subscale score of 91.

Procedures

Clinicians from each patient's multidisciplinary team recorded demographic and clinical information at the two assessment points in a purpose-designed database. Clinical information for each patient and for each admission was examined by the lead investigator in this research team (HB) to confirm participant eligibility. If patients underwent multiple amputations within the one hospital admission; for example, transtibial followed by transfemoral, or unilateral to bilateral, then the final amputation for that admission was recorded. If a patient underwent multiple amputations across multiple admissions during the study period, data were included for each hospital admission. The total number of patients who underwent a lower limb amputation during the study period (including those not admitted for subacute inpatient rehabilitation) was obtained from hospital administrative records.

Analysis

For Aim 1, descriptive statistics were used to summarize demographic and clinical characteristics of the sample at the two assessment points. Analyses were performed for the whole cohort over the seven-years, as well as for admissions in each calendar year.

In preparation for analyses to investigate Aim 2, the first day of the study period (January 1, 2005) was considered the index day and assigned as day one. The time from commencement of the study period was then determined for each patient based on their date of admission up to a (theoretical) maximum of day 2556 (December 31, 2011). Generalised linear mixed modelling was conducted to examine which admission characteristics (independent variables) were associated with being admitted earlier or later in the seven-year period (dependent variable). This included a model fitting exercise to determine the most appropriate model parameters using the Akiake Information Criterion [11] as an indicator of model fit with penalty for complexity (to avoid overfitting the model). The final model included days since study commencement (dependent variable), and eight fixed effects of interest (gender, aetiology, MMSE, FIM-Motor, age, number of comorbidities, whether the patient used an indoor mobility aid prior to admission and level of amputation). To adjust for potential "within aetiology" correlation (clustering within dysvascular or non-vascular aetiology), robust variance estimates were employed (using the Huber-White sandwich estimate of variance) when calculating confidence intervals [12]. A random effect (random intercept model) was also included to account for the presence of individuals who had more than one amputation admission during the seven-year period (that is, admissions nested within individual patients, typically those with dysvascular aetiology, due to repeat admissions for further amputations).

The modelling approach was repeated to examine which discharge characteristics (independent variables) were associated with being admitted earlier or later in the seven-year period (dependent variable) (Aim 3). The final model contained seven fixed effects that included three discharge variables of interest (whether a prosthesis was prescribed, discharge FIM-Motor, and length of stay) as well as adjustment for four admission variables (aetiology, MMSE, prior mobility aid and level of amputation). To adjust for potential "within aetiology" correlation, robust variance estimates were again employed (Huber-White sandwich estimate of variance) when calculating confidence intervals. A random effect (random intercept model) was again included to account for the presence of individuals (typically those with dysvascular aetiology) who had more than one amputation admission during the seven-year study period.

Alpha was set at .05. Analyses were performed with StataMP ver.13 (StataCorp LP, College Station, Tx, USA).

Results

Characteristics at Admission to Subacute Inpatient Rehabilitation

Characteristics of the sample, per calendar year, are outlined in Table 1. Between 2005 and 2011, there were 601 major lower limb amputations at the participating facility. There was no consistent pattern in the number of amputations performed each year; the highest number was in 2007 (n=107), while the lowest number (n=78) occurred in each of 2005 and 2010. There were 425 (71%) admissions to subacute inpatient rehabilitation. These inpatient admissions comprised of 335 individuals with a mean age of 74 years (SD14), 75% male, and 80% for dysvascular causes. Mean age fluctuated over the study period with the highest in 2005 and 2008 (67 years), and the lowest in 2006 and 2010 (62 years). Of the 425 admissions, 32 (7.5%) were readmissions after further amputation surgery: 24 for an amputation on the contralateral leg and eight for a more proximal amputation on the ipsilateral leg. Admission MMSE for the group was a median of 29.2 (IQR 25-30), with more than 75% achieving a score high enough to indicate no impairment in cognitive function. Admission FIM-Motor for the group was a median of 70 (IQR 54.5-76). Cardiovascular diseases were the most frequently reported comorbidity, regardless of year. Hypertension, diabetes and peripheral vascular disease were each present in >50% of this population. The total number of comorbidities was median 4 (IQR 2-5) with minimal variation over the seven-year study period.

Table 1 Characteristics of patients with lower limb amputation admitted to subacute rehabilitation, by calendar year, from 2005 to 2011

Characteristic	Total	2005	2006	2007	2008	2009	2010	2011
Total Hospital Amputations	601	78	81	107	81	101	78	75
Total Rehab Admissions n (%)	425 (71)	66 (60)	51 (63)	71 (66)	59 (73)	76 (75)	57 (74)	45 (60)
Aetiology of Amputation n=425								
Dysvascular (diabetes, PVD, venous)	342 (80)	56 (85)	40 (78)	61 (86)	50 (85)	60 (79)	41 (72)	34 (76)
Nonvascular (trauma, tumour, infection)	83 (20)	10 (15)	11 (22)	10 (14)	9 (15)	16 (21)	16 (28)	11 (24)
Gender n (%)								
Males	314 (74)	48 (72)	35 (69)	51 (72)	46 (78)	57 (75)	45 (79)	32 (71)
Females	111 (26)	18 (27)	16 (31)	20 (28)	13 (22)	19 (25)	12 (21)	13 (29)
Admission Age (years)								
Mean (SD)	65 (14)	67 (13)	62 (16)	67 (12)	67 (15)	64 (16)	62 (14)	65 (10)
Median (IQR)	67 (57-75)	67 (59-77)	61 (54-75)	68 (60-75)	70 (61-78)	67 (55-76)	64 (54-74)	68 (57-70)
Range	19-93	39-93	19-89	25-93	30-89	24-88	22-86	39-85
Amputation Side n (%)								
Left	191 (45)	27 (41)	22 (43)	32 (45)	25 (42)	36 (47)	24 (42)	25 (56)
Right	220 (52)	37 (56)	26 (51)	37 (52)	33 (56)	39 (51)	30 (53)	18 (40)
Bilateral	14 (3)	2 (3)	3 (6)	2 (3)	1 (2)	1 (1)	3 (5)	2 (4)
Amputation Level n (%)								
Transtibial- unilateral	184 (43)	30 (45)	20 (39)	25 (35)	26 (44)	39 (51)	21 (37)	23 (51)
Transfemoral- unilateral	147 (35)	22 (33)	17 (33)	30 (42)	21 (36)	23 (30)	21 (37)	13 (29)

Bilateral TTA	38 (9)	8 (12)	5 (9)	5 (7)	5 (8)	7 (9)	5 (9)	3 (6)
Bilateral TFA	27 (6)	0	4 (8)	5 (7)	2 (3)	2 (3)	9 (16)	5 (11)
TTA + TFA	16 (4)	4 (6)	1 (2)	3 (4)	4 (7)	3 (4)	1 (2)	0
Other	13(3)	2 (3)	4 (8)	3 (4)	1 (2)	2 (3)	0	1 (2)
MMSE (/30)								
Median (IQR)	29 (25-30)	30 (28-30)	30 (25.5-30)	27 (25-29)	27 (24-30)	30 (25-30)	30 (26-30)	30 (27-30)
Prior mobility aid indoors n (%)								
Nil	199 (47)	32 (48)	27 (53)	28 (39)	26 (44)	42 (55)	23 (40)	21 (47)
Stick	63 (15)	11 (17)	9 (18)	10 (14)	11 (19)	9 (12)	4 (7)	9 (20)
Walker (4ww/ walking frame)	54 (13)	4 (6)	4 (8)	11 (15)	8 (14)	13 (17)	10 (18)	4 (9)
Wheelchair	79 (19)	16 (24)	5 (10)	18 (25)	9 (15)	8 (11)	16 (28)	7 (16)
Other (including crutches/ forearm support frame)	30 (7)	3 (5)	6 (12)	4 (6)	5 (8)	4 (5)	4 (7)	4 (9)
FIM-Motor Admission								
Median (IQR)	70 (54.5-76)	70 (59-77)	71 (61-75)	68 (53-75)	64 (48-72.5)	73 (59-78.25)	73 (59-77)	67 (51.5-73.25)
Comorbidities n (%)								

Characteristics at Discharge from Subacute Inpatient Rehabilitation

The discharge characteristics of the sample of 425 admissions are presented per calendar year in Table 2. There was a wide variation in length of stay in the unit, ranging from 2 days to 273 days across the study period. A total of 238 (56%) patients were prescribed prostheses during their inpatient rehabilitation admission, with the remaining patients prescribed a wheelchair to mobilise with. Prosthetic prescription rates trended downwards across the seven years, with the highest proportion in 2005 (n=45, 68%) and the lowest in 2011 (n=21, 47%). Median (IQR) FIM-Motor score at discharge from rehabilitation was 79 (74-84). A total of 30 (7%) patients left the subacute inpatient rehabilitation unit before completion of the discharge FIM-Motor. The proportion of patients who were discharged to live in the community remained constant over the seven-years, with 82% achieving this in 2005, 2010 and 2011.

Table 2 Characteristics of patients with lower limb amputation, discharged from subacute rehabilitation, by year, from 2005 to 2011

Discharge Outcomes	Total	2005	2006	2007	2008	2009	2010	2011
Length of Stay (Days)								
Median (IRQ)	48 (25-76)	34 (21.5- 68.5)	44 (23-78)	53 (26.5-74.5)	57 (38-80)	57.5 (31- 76)	41 (21-80)	48 (26-71)
Range	2-273	6-218	8-270	7-182	10-231	12- 229	3- 272	2-197
Prescribed a prosthesis n (%)	238 (56)	45 (68)	29 (57)	37 (52)	31 (53)	48 (63)	27 (47)	21 (47)
FIM-Motor Discharge								
Median (IQR)	79 (74-84)	81 (76-84)	78 (75-83)	78 (71-82)	76.5 (59.75-82)	80 (73.75-85)	79 (76-84)	79 (73-84)

Discharge mobility aid n (%)								
Nil	6 (1)	1 (2)	0	1 (1)	0	2 (3)	2 (4)	0
Stick(s)	96 (23)	14 (22)	12 (24)	14 (20)	14 (24)	20 (26)	12 (21)	12 (27)
Walker (4ww, hopper)	48 (11)	7 (11)	1 (2)	9 (13)	5 (8)	15 (20)	6 (11)	2 (4)
Wheelchair	229 (54)	34 (52)	30 (59)	38 (54)	31 (53)	34 (45)	36 (63)	26 (58)
Other (including crutches)	22 (5)	6 (10)	3 (6)	3 (4)	5 (8)	1 (1)	1 (1)	3 (7)
Discharge Destination n (%)								
Community	340 (80)	54 (82)	39 (76)	56 (79)	47 (80)	60 (79)	47 (82)	37 (82)
Hospital transfer	45 (11)	6 (9)	7 (14)	6 (8)	5 (8)	8 (11)	8 (14)	5 (11)
Residential Care Facility	25 (6)	3 (5)	4 (8)	5 (7)	3 (5)	6 (8)	2 (4)	2 (4)
Death	15 (4)	3 (5)	1 (2)	4 (6)	4 (7)	2 (3)	0	1(2)

Abbreviations: 4ww, Four wheeled walker; FIM, Functional Independence Measure; IQR, interquartile range

Admission characteristics associated with admission date

Patient characteristics at admission to subacute inpatient rehabilitation that were associated with admission date were aetiology, MMSE and FIM-Motor (Table 3). The proportion of patients with lower limb amputation due to nonvascular causes admitted for subacute inpatient rehabilitation increased over time, ranging from 15% in 2005 to 24% in 2011 (ß=-181.836, p<.001). Cognitive function at admission (measured by MMSE) increased over the study period (ß=9.296, p<.001) whereas median (IQR) FIM-Motor at admission decreased, from 70 (59-77) in

2005 to 67 (51.5-73.25) in 2011 (ß=-1.937, p<.001). There was no association between admission date in the seven-year period and gender (p=.16), age (p=.75), total comorbidities (p=.89), or prior mobility aid (p=.03) indicating no changes in these variables.

Table 3 Summary of coefficient (and 95% confidence intervals), z-scores and p-values from the generalised linear models examining admission characteristics that were associated with day of admission.

Dependent variable	Independent variable		Observed coefficient	95% confidence intervals lower	upper	z-score	p-value
Admission day	Gender		110.670	-41.758	263.099	1.42	0.155
	Aetiology		-181.836	-188.696	-174.975	-51.95	<0.001
	MMSE		9.296	6.859	11.734	7.47	<0.001
	Admission FIM-Motor		-1.937	-2.711	-1.162	-4.90	<0.001
	Total comorbidities		3.081	-38.719	44.880	0.14	0.885
	Age		0.376	-1.970	2.726	0.32	0.753
	Prior mobility aid		83.854	-0.791	168.500	1.94	0.05
	Amputation level	Unilateral TTA					
		Unilateral TFA	121.466	47.501	195.430	3.22	0.001
		Bilateral TTA	247.313	72.007	422.619	2.77	0.006
		Bilateral TFA	377.17	318.717	435.623	12.65	<0.001
		TTA + TFA	132.981	4.175	261.788	2.02	0.043
		Other (including disarticulations)	-67.267	-811.580	677.045	-0.18	0.859

Abbreviations: MMSE, Mini–Mental State Examination; TFA, transfemoral amputation; TTA, transtibial amputation.

Discharge characteristics associated with admission date

Patient characteristics at discharge from subacute inpatient rehabilitation that were associated with admission date in the seven-year period were prosthetic prescription, discharge FIM-Motor and length of stay (see Table 4). Prosthetic prescription rates were highest in 2005 at 68% and decreased over time to 47% in 2010 and 2011 (ß =-200.473, p<.001). Motor function (FIM-Motor) at discharge decreased significantly over time, from median 81 (IQR 76-84) in 2005 to 79 (IQR 73-84) in 2011 (ß=-1.267, p<.001). There was a negative association between admission date and length of stay (ß=-2.275, p<.001), indicating that after adjusting for covariates in the model, length of stay was shorter toward the end of the study period. However, the absence of a clear pattern in the length of stay medians and ranges across the study period (Table 2) indicates this association may not be clinically meaningful.

Table 4 Summary of coefficients (and robust confidence intervals), z-scores and p-values from the generalised linear models examining discharge characteristics that were associated with day of admission.

Dependent variable	Independent variable	Observed coefficient	95% confidence intervals lower	upper	z-score	p-value
Admission day	Prosthetic prescription	-200.473	-298.873	-102.072	-3.99	<0.001

Discharge FIM-Motor		-1.267	-1.332	-1.202	-38.30	<0.001
Length of stay		-2.275	-2.942	-1.608	-6.68	<0.001
Aetiology		-190.700	-241.170	-140.230	-7.41	<0.001
MMSE		2.389	-4.982	9.759	0.64	0.525
Prior mobility aid		94.647	-20.458	209.753	1.61	0.107
Amputation level	Unilateral TTA					
	Unilateral TFA	29.005	-86.367	144.376	0.49	0.622
	Bilateral TTA	246.379	78.961	413.797	2.88	0.004
	Bilateral TFA	282.426	166.911	397.941	4.79	<0.001
	TTA + TFA	220.361	88.981	351.741	3.29	0.001
	Other (including disarticulations)	55.052	-606.649	716.751	0.16	0.870

Abbreviations: MMSE, Mini–Mental State Examination; TFA, transfemoral amputation; TTA, transtibial amputation.

Discussion

This study is the first to analyse seven-years of data from 335 patients (425 admissions) with lower limb amputation at admission to, and discharge from, subacute inpatient rehabilitation. Although the expected increase in the number of lower limb amputations was not seen, patient characteristics did change across the seven-years. At admission to the rehabilitation unit, increases were noted in the proportion of people with lower limb amputation of nonvascular aetiology as well as cognitive function (MMSE), while motor function (FIM-Motor) decreased over the study period. Age, gender, co-morbidities and prior walking ability did not change. Prosthetic prescription rates and discharge motor function (FIM-Motor) decreased over the observed time.

It was surprising that there was no increase in the number of lower limb amputation surgeries performed across the seven-years at this hospital. This was particularly unexpected given 80% of patients had a dysvascular aetiology, and it is known that risk factors for amputation are increasing among the ageing population [2]. It is noteworthy that Lazzarini and colleagues [13] reported a reduction in lower limb amputations during a similar period to our study and in the state of Queensland. However, these findings contrast with two other studies during a similar time, one in Australia [14] and one in Germany [15], which reported an increase in the number of amputations.

The introduction of initiatives such as multidisciplinary diabetic foot clinics may help explain why there was no increase in amputations in our study. Programs in Australia [13] and other countries, including the Netherlands [16], have aimed to increase the number of podiatrists employed in hospitals, to educate patients and health professionals on the diabetic foot, and develop clinical pathways to better manage patients with diabetic foot complications. The development of these specialist foot clinics has led to improvements in chronic disease management, ulcer management, antibiotic therapies, and limb preservation, and to deferring major amputation surgery [14,17]. Improvements in medical management of patients at risk of dysvascular-related amputations may also explain the relative increase in proportion of people with nonvascular amputation admitted to the inpatient rehabilitation unit in our study. Improvements in foot care have been linked to delaying the need for major lower limb amputation where vascular disease is present [14,17].

It was expected that the age at amputation would increase given the ageing population [2] and the improvements in management of diabetes and vascular disease [14,17], however we did not see any change in age over the seven-years. Earlier studies [2,18,19] also found no change in age, whereas Hordacre and colleagues [20] more recently reported a decrease in age at amputation, perhaps indicative of the earlier onset of diabetes. In our study, a change in the age of patients with dysvascular amputation may not have been found due to a potentially confounding effect of the increased proportion of nonvascular amputees who are known to be younger [21].

Cognitive function in the patients in our study may have also been influenced by the increasing proportion of younger people with nonvascular amputations. Cognitive impairment has a high prevalence among people with lower limb amputation especially in the areas of memory and executive function [22]. However, in our population, cognitive function (as measured by MMSE) was high and increased over the study period.

In contrast, motor function at admission and discharge (measured by the FIM-Motor) decreased over time. This was surprising, given the increasing proportion of people with nonvascular amputations as they typically have less co-morbidities and higher motor function compared to patients with dysvascular amputations [21]. In a study of people who had suffered a stroke [23] it was suggested that a reduction of one FIM point was equivalent to an average of 2.19 minutes of extra in-home assistance being required per day. If a person with a lower limb amputation requires a similar level of additional assistance per reduction in each FIM point, this would equate to nearly five minutes of additional assistance by the end of our seven-year study period. This cumulative need of extra assistance could impact on a person’s ability to live in the community.

Further, motor function at discharge has been shown to have implications for prosthetic use [24]. The decreasing motor function at discharge in our study coincided with a decrease in prosthetic prescription rates, although a relationship has not been established.

Prosthetic prescription rates in our study were low compared to previous studies, where up to 85% of people with lower limb amputation in a hospital rehabilitation unit have been fitted with a prosthesis [25]. The investigators observed two specific changes in practice over the seven-year study period that may have influenced prosthetic prescription rates. The first was the adoption of objective measures by members of the multidisciplinary team for guiding prosthesis prescription, such as the Amputee Mobility Predictor [26]. This tool has been shown to be a reliable and valid measure for assessment of functional ambulation in people with lower limb amputation [26]. Secondly, the multidisciplinary team meetings changed to include attendance of the prosthetist and the development of an electronic method of recording multidisciplinary team meetings. A team approach has been advocated to achieve the best results when rehabilitating people with lower limb amputations, including decisions about prosthetic prescription [27]. Further, structured models for multidisciplinary meetings have been reported to have a beneficial effect on team function [28] which may have contributed to refined clinical decisions regarding prescription of prosthetics.

The cost of prosthetic rehabilitation may have also contributed to the decline in prosthetic prescription rates. Preparing for, manufacturing, and training a patient to walk with a prosthesis requires significant resources [29]. It is possible that increasing demand for healthcare services could lead to fewer prostheses being prescribed to patients wherever there is healthcare resource scarcity.

This study has some limitations for consideration. As we utilised routinely collected information where clinicians completed a dataset, it relied upon the accuracy and completeness of the documentation by the multidisciplinary team. Ward administration staff checked files for completeness prior to finalising each patient's admission dataset to minimise the potential for missing data. In addition, missing data available from medical charts was retrieved by the lead investigator. Utilisation of routinely collected information also limited what outcome measures we could use. This study only examined people with lower limb amputation who were admitted for inpatient rehabilitation and did not include those that were discharged post-amputation from acute care to home or a residential care facility. Therefore, these findings may not be generalisable to all patients with lower limb amputations. Additionally, as this study was based at a single hospital rehabilitation unit, results may not be generalisable to dissimilar clinical or societal contexts.

Conclusions

The number of lower limb amputations performed at a major tertiary facility did not change between 2005 and 2011. The number of admissions to subacute inpatient rehabilitation resulting from lower limb amputations also did not change. At admission to the rehabilitation unit, the proportion of people with nonvascular lower limb amputations increased over the study period, along with improvements noted in cognitive function (MMSE), while admission motor function (FIM-M) decreased over the study period. Age, gender, co-morbidities and prior walking ability did not change. At discharge from rehabilitation, prosthetic prescription rates and discharge motor function (FIM-M) decreased over the seven-year study period. These changing characteristics inform clinical practice, such as highlighting the need to address motor function to optimise the patient's ability to return to the community, and support for a team approach to refine clinical decisions regarding prosthetic prescription given the high costs associated with prostheses.

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