

Original Article

Geriatrics inpatients in RIPAS Hospital, Brunei: Patient characteristics and rehabilitation needs

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ABSTRACT

Background/Purpose: Geriatric medicine is a new medical sub-specialty in Brunei. Information on co-morbidities and health care needs of older inpatients is essential for service planning.

Methods: Retrospective review of electronic records for geriatric inpatients for three months. Pre-admission function, co-morbidities and input from allied health professionals were reviewed. Days of hospital stay were classified as medical treatment, rehabilitation, discharge planning and others. Outcome measures such as length of stay, mortality and readmission rates were assessed.

Results: The 76 admissions consisted of 63 patients, equal gender proportions. Median age 85 years. Katz Index of Independence scores classified 67% with severe functional impairment and 26% as independent. More than a third had dementia. Only one-fifth were independent with mobility. Almost half were bed bound or transfers only. Sixty percent were referred for physiotherapy, 25% occupational therapy, 60% dietetics and 30% for speech language therapist input.

Median length of stay was 8 days. Distribution of bed days in hospital were: medical treatment 32%, rehabilitation 19%, discharge planning 19%, admission under other teams 25% and others 6%. Inpatient mortality rate was 12%. There was a 5% 30-day mortality and 20% readmissions within a month.

Conclusion: Older patients admitted under geriatric medicine in RIPAS Hospital have a high burden of co-morbidities, dementia, and poor functional status. Inpatient treatment required much medical and allied health input. A dedicated geriatrics ward is warranted to strengthen comprehensive geriatric assessment and multidisciplinary intervention to improve function outcomes. Community support services should also be developed to manage dependent patients after discharge.

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INTRODUCTION

Acute admissions into hospital by elderly patients are increasing, especially those 75 years and older with associated increased length of stay and health care costs.¹ These patients benefit from comprehensive geriatrics assessment, which is also associated with improved survival and function.²

In Brunei, geriatric medicine is a new medical subspecialty.³ Inpatient geriatrics services are available in the national Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital, which

has approximately 600 beds in total for all specialties.⁴ Effort is underway to improve awareness of geriatric syndromes and develop services for elderly patients.³

Admissions to geriatric medicine occur as follows: Patients admitted via the Emergency Department for Internal Medicine are reviewed during a post-acute ward round by a medical consultant, then admitted at their discretion to the most relevant medical specialty. Patients are transferred to gender specific medical wards, as there is currently no specific geriatrics ward in RIPAS Hospital. Referrals are sent when deemed appropriate by the responsible team to allied health professionals (physiotherapist, occupational therapist, speech language therapist, psychologist and social workers), who are shared between all internal medicine specialties.

Patients under geriatric medicine receive comprehensive geriatrics assessment, which is contributed by a geriatric medicine team, including a geriatrics nurse and allied health professionals. Functional goals are set and progress discussed at a weekly multidisciplinary team meeting. The geriatrics nurse offers education to carers as required, with home visit follow-ups for dependent patients. This role is crucial for ensuring patients get appropriate cares, as there are no residential care facilities in Brunei.

There is minimal data available on the elderly population in Brunei. The life expectancy in Brunei is 76.7 years for males and 78.1 for females.⁵ However, the United Nations predicted Brunei having one of the fastest rate of ageing in South East Asia; people aged 60 years and older constituted 3.9% of the population in 2000, but estimated to rise to 28.7% by 2050.⁶

Further information such as comorbidities and health care needs of this group is essential for service development and planning. It would be useful to review elderly patients who require acute services initially, then gradually acquire details of the elderly community population who may in time also need medical assessment and intervention. This paper is the first to describe the type of patients admitted acutely under geriatric medicine in Brunei.

METHODS

This is a descriptive study involving retrospective review of electronic records of patients admitted under the Geriatrics service in RIPAS Hospital between 5th January 2015 and 31st March 2015 inclusive. Demographic information including age and gender were collected. The admission diagnosis and medical comorbidities, including cognition and mood issues were identified. Charlson Comorbidity Index was calculated; this applies weighted scores for co-morbidities to predict ten year mortality.

Pre-admission function was assessed in terms of cognition, basic activities of daily living (bathing, dressing, toileting, transferring, continence, feeding), mobility and Katz Index of Independence. Change in function and medication burden were compared between admission and discharge.

Input from the multidisciplinary team (Physiotherapy, Occupational Therapy, Medical Social Worker, Speech and Language Therapists and Dietician) were reviewed for referral indication and number of times seen during admission. Information on duration of each allied health professional assessment or intervention was unavailable. Input requested or provided as outpatients or community settings were not included in the analysis. We reviewed whether family discussions were provided prior to discharge.

Days of hospital admission under Geriatrics care were classified under the following categories:

1. Medical Treatment: predominant reason for inpatient stay is clinical observation and monitoring, regular blood tests and drug treatment
2. Rehabilitation: predominant reason for inpatient stay is multidisciplinary team input for assessment and rehabilitation, usually with functional goals to achieve before discharge
3. Discharge planning: predominant reason for inpatient stay is planning for safe discharge and the patient is medically fit and no longer undergoing active rehabilitation
4. Other: does not fit into the above categories

Days admitted under other teams were recorded separately.

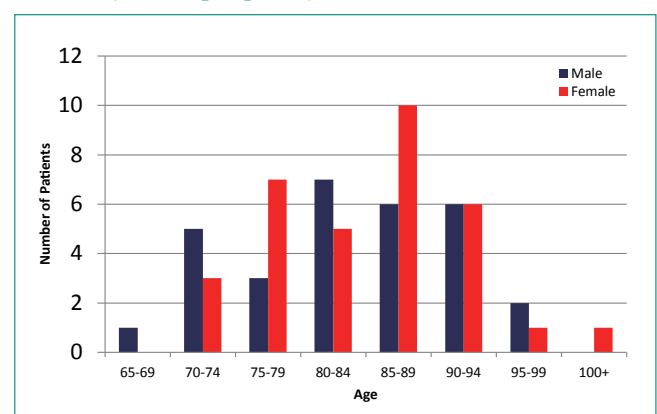
Outcome measures were length of stay, mortality in hospital, 30 day mortality rate and representation to hospital within 30 days after discharge. Follow-up arrangements were identified.

Microsoft Excel was used for data entry and analysis.

RESULTS

There were 76 admissions in total, consisting of 63 patients. There were 33 females and 30 male patients. Median age was 85 years (Range 65 to 101 years). Age distribution is shown in Figure 1.

Figure 1. Age distribution of patients admitted under Geriatric Medicine (according to gender)

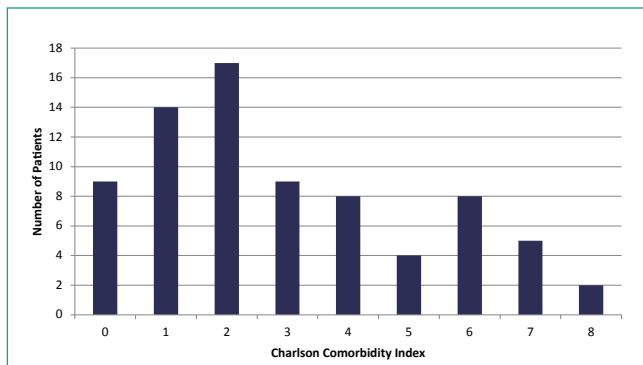


For 27 (35.5%) patients, there were no presentations to hospital the previous year. 24 (31.5%) and 11 (14.5%) patients presented to hospital once and twice respectively within a year. Three patients were admitted seven times within a year before admission under Geriatrics.

The main reasons for presenting to hospital were: fever 19 (25%) patients, breathlessness in 13 (17.1%), generalized weakness 11 (14.5%), anorexia in 8 (10.5%) and drowsiness in 8 (10.5%) patients. The main diagnosis given as the main cause of admission was: chest infections 25 (32.9%) patients, acute kidney injury in 10 (13.2%), cardiac failure 10 (13.2%), urine infection in 9 (11.8%) and constipation in 4 (5.3%) patients.

Figure 2 illustrates the comorbidity burden of geriatric inpatients according to the Charlson Comorbidity Index. In terms of cognition, 28 (36.8%) had dementia, while 23 (30.3%) did not have cognitive impairment. Nine patients were non-communicative without a previous diagnosis of dementia. One patient was subsequently reviewed in clinic and diagnosed with mild cognitive impairment. Fifteen (19.7%) patients had possible cognitive impairment but no formal diagnosis was given. Four patients had anxiety and three patients had depression.

Figure 2. Charlson Comorbidity Index



The associated medication burden is shown in Figure 3. Median was 6 medications per patient (Range 0-13), which was unchanged between admission and discharge.

Figure 3. Number of medications prescribed for patients admitted under Geriatrics

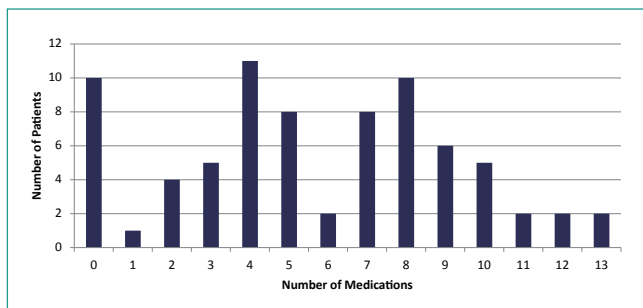
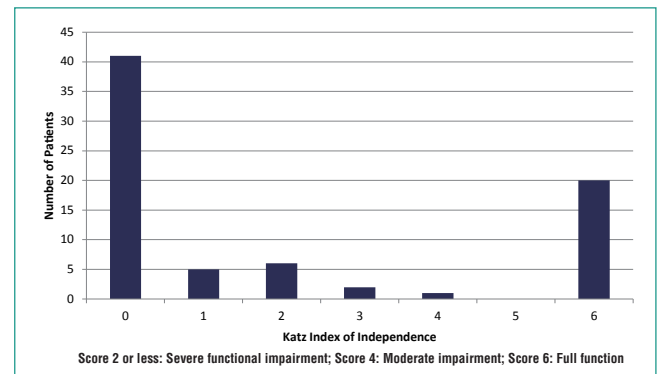


Figure 4 depicts the functional ability of geriatric patients with the Katz Index of Independence.

In terms of mobility, 35 (46.1%) are wheelchair or bedbound. 18 (23.7%) patients were independent with mobility prior to admission. The remaining patients

Figure 4. Depicts the functional ability of geriatric patients with the Katz Index of Independence

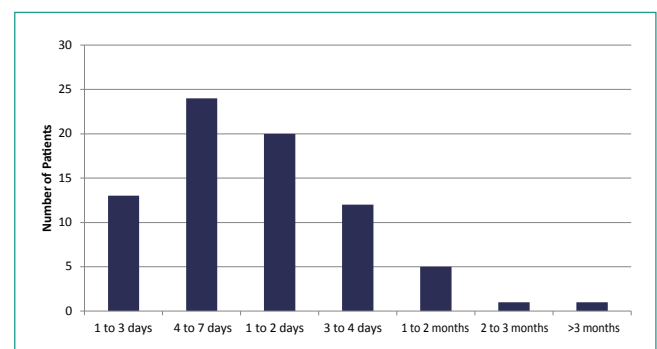


required aids and/or assistance for mobility or limited to transfers only. When comparing functional ability before and after admission (excluding nine patients who passed away), 49 (73.1%) patient remained at similar function. Two patients had improved function, while 16 (23.9%) patients had decreased functional ability.

Table 1 summarizes multidisciplinary team input received by patients admitted under Geriatrics. Family discussions were provided for 61 (80.3%) patients. Follow-up organized for discharged patients are as follows: Geriatrics Clinic 32 (47.8%) patients, Home-Based nursing 15 (22.4%) patients, other specialties 12 (17.9%) patients, Palliative Nursing 9 (13.4%) patients and other health professionals (10.4%). Eight patients did not require follow-up.

Of the 76 admissions, 9 (11.8%) patients passed away in hospital. For the remaining 67 patients, 3 (4.5%) had a 30 day mortality, and 14 (20.8%) were readmitted within one month. Median length of stay was eight days (Range 1 to 91 days). The distribution of patient length of stay is shown in Figure 5. Overall, there were 914 inpatient days for these patients admitted during the 85 days between 5th January and 31st March). Table 2 shows the total bed days categorized by main reason for inpatient treatment.

Figure 5. Length of inpatient stay



DISCUSSION

This was a retrospective review of patients admitted under Geriatric medicine in RIPAS Hospital for three months. As the service is new and medical admissions have relatively easy access to medical subspecialties, not all older people are admitted under geriatrics. However, this data is essential for

Table 1. Summary of multidisciplinary team input for patients admitted under Geriatrics

Physiotherapy	n
Number of patients referred	45
Indications for referral: (Note: 3 patients required physiotherapy for more than one issue)	
Mobility	36
Chest	6
Transfer technique	5
Shoulder review	1
Median (range) number of times a patient was seen (if referred to therapist)	2 (1 to 33)
Occupational Therapy	n
Number of patients referred	19
Indications for referral: (Note: majority patients that required occupational therapy input were referred for more than one issue)	
Environment	14
Functional assessment	9
Equipment	4
Transfer technique	3
Fatigue management	1
Median (range) number of times a patient was seen (if referred to therapist)	2 (1 to 25)
Medical Social Worker	n
Number of patients referred	5
Indications for referral:	
Limited support	2
Social assessment	1
Family dynamics	1
Means testing: Financial Assistance for equipment	1
Median (range) number of times a patient was seen (if referred to therapist)	1 (1 to 4)
Dietician	n
Number of patients referred	46
Indications for referral:	
Nasogastric feeding	12
Malnutrition	11
Diabetes	9
Nutritional Assessment	9
PEG feeding	3
Pressure area and constipation	1
Unknown indication for referral	1
Median (Range) number of times a patient was seen (if referred to therapist)	2 (1 to 15)
Speech and Language Therapist	n
Number of patients referred	22
Indications for referral:	
Swallow assessment	22
Speech and communication assessment	2
Median (range) number of times a patient was seen (if referred to therapist)	2 (1 to 5)

Table 2. Reason for inpatient stay and number of bed days

Reason for Inpatient Stay	Number of Patients and Bed Days
Medical treatment	55 patients Median 4 days (Range 1 to 24 days) Total Bed Days 279
Rehabilitation	24 patients Median 4 days (Range 2 to 33 days) Total Bed Days 166
Discharge planning	45 patients Median 2 days (Range 1 to 41 days) Total Bed Days 163
Initially admitted under other teams	22 patients Median 6.5 days (Range 2 to 45 days) Total Bed Days 221
Other reasons	12 patients Median 4 days (Range 1 to 14 days) Total Bed Days 53
Admitted before / during weekend; Unable to classify non-working day under above categories	32 patients

planning geriatric services given the paucity of information regarding this population.

The age and gender distribution corresponds to the population distribution of older people; as females have a higher life expectancy in the country.⁴ Majority had previous presentations to hospital before admission to Geriatrics. The main presenting complaints result in impaired function or severe illness, with most of the causes due to infections or organ failure. This reflects the increased complexity and the high comorbidity burden of this group.

More than a third have dementia; some were not previously diagnosed but identified during the admission to geriatric medicine. Patients with dementia are possibly preferentially admitted under geriatric medicine in this hospital, as estimates from the United Kingdom showed 6% of people with dementia are inpatients in general hospitals at a given time point. Between 40 to 64% of those affected by dementia are not formally diagnosed;⁷ admission to hospital is an opportunity to assess cognition and is standard of care for older patients admitted to hospital.⁸ Ongoing reminders and emphasis on the importance of cognitive assessment may be required to improve diagnosis of dementia in hospital.

The medication burden is high on admission without change on discharge. This is a concern as polypharmacy usually leads to increased cost, risk of incorrect doses, drug adverse events and potential rehospitalisation.⁹ Risk of readmission increases when prescribed more than five drugs, which occurred in half the patients in this study.¹⁰ There may be a need to consider de-prescribing in this population. It is important to clarify the goals of therapy and consider cessation of several drugs as longevity may not be an appropriate goal for these patients.

Another consideration is to focus deprescribing on specific classes of drugs rather than number of drugs. A randomized

controlled trial optimizing treatment of three risk factors for readmission namely depression, malnutrition and drug related problems resulted in increased drug prescriptions with subsequent increased adverse drug reactions and a readmission rate of 29%. However, reduced prescribing of anti-hypertensives and anti-thrombotic agents resulted in reduced readmissions,¹¹ suggesting the importance of choosing which types of drugs to cease.

In terms of function, one fourth was documented as fully independent. This may be an overestimate as anecdotally, some patients considered independent on admission actually required assistance from other carers. Collateral history is important to verify functional status as this will have implications on the goals of rehabilitation and discharge planning. Of significant concern, more than two-thirds have severe functional impairment (Katz score two or less). This suggests a pressing need for public health education to maintain function or prevent functional decline and develop community services to support patients and carers given the high level of dependence.

When older adults are hospitalised with medical illness, there is a risk of deconditioning and loss of function. At least a third may not recover baseline function in terms of activities of daily living, while 20% with functional decline during illness fully recovered with inpatient rehabilitation.¹² The patients in this study required significant multidisciplinary team input during the admission, which includes a component of assessment and rehabilitation. It is worthwhile investing time and effort during the inpatient stay for geriatric patients as this improves outcomes related to function and reduces nursing home admissions and mortality.¹³

It is unclear how much time was required by the patients, as not all encounters by allied health professionals were necessarily documented and there is limited information how long each encounter took. This requires further

clarification, as these details may be useful for staff recruitment and service planning.

While community support services are still being developed, there is some reliance on hired domestic workers to care for dependent older adults in Brunei. This may contribute to the lower pre-morbid functional ability and reduce motivation for patients and family to undergo intensive rehabilitation as they may be discharged earlier with such available assistance provided by domestic workers.¹⁴

Most were discharged within two weeks. Medical treatment accounted for a third of the total bed days, indicating the acuity of illness in older people admitted under geriatric medicine. Those with longer length of stay tended to require further rehabilitation and had complex discharge planning; each accounted for one-fifth of total bed days. Strengthening community services to transition from acute care should be considered to reduce length of hospital stay.

The one month readmission rate was 20.8%. This is significantly higher than other geriatrics units; one study found a readmission rate of 14.2% within three months, related to frailty or severe disability, rather than acuity of presentation or any associated comorbidities. Early identification of those at risk may be required facilitate intervention to prevent repeat hospitalisations.¹⁵

Another identified an 8% readmission rate within three months for patients who received full community support at the time of discharge. On subsequent readmissions, over half could be discharged home again with the remaining likely to die in hospital or require institutional long-term care.¹⁶ Development of community support services in Brunei will hopefully reduce the readmission rate.

Suggestions for development include having a specific designated geriatrics ward to facilitate inpatient evaluation and treatment. Admissions to a specific Geriatrics Evaluation and Management Units (GEMU) resulted in less functional decline at discharge and a lower rate of institutionalisation a year after discharge.¹⁷

Inpatient management should include multi-component interventions specific for older people, which leads to better processes of care without increased hospitalization costs.¹⁸ Comprehensive discharge planning is essential particularly for those at risk for readmission. This can be implemented by advanced practice nurses, shown in a trial to reduce readmissions or increase the length of time before readmission and subsequently reduced health care costs.¹⁹ Home based intervention with follow-up home visits should also be considered. When performed by a nurse and pharmacist, there were fewer unplanned readmissions, out-of-hospital deaths, total deaths, emergency department attendances, total days of hospitalization and lower hospital based costs of health care without any increase in community based health care costs.²⁰

CONCLUSION

Older patients admitted under geriatric medicine in RIPAS Hospital have a high burden of comorbidities, dementia, polypharmacy and poor functional status. Inpatient assessment and rehabilitation required much input from a multidisciplinary team prior to discharge. There was also a high readmission rate to hospital. A dedicated geriatrics ward is warranted to strengthen comprehensive geriatric assessment and intervention to improve function outcomes. Community support services should also be developed urgently to manage such dependent patients after discharge.

CONFLICTS OF INTEREST STATEMENT

There are no conflicts of interests including financial, consultant, institutional and other relationships that might lead to bias.

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