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PREVALENCE AND RISK FACTOR ASSESSMENTS OF PRESSURE ULCERS AMONG MEDICAL IN-PATIENTS IN RIPAS HOSPITAL.

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ABSTRACT

INTRODUCTION: A previous audit in 2011 identified a low prevalence of pressure ulcers (1.6%) among medical inpatients in Brunei Darussalam. As there were recent concerns that the prevalence of pressure ulcers in medical wards in RIPAS Hospital may be higher than previously reported, a repeat audit to identify the current prevalence rate of pressure ulcers was conducted. **METHODS:** This was a prospective audit of pressure ulcer prevalence among inpatients in all medical wards in RIPAS Hospital over a 1-week period. **RESULTS:** Out of 363 inpatient encounters during the audit week, only 142 patients have completed Pressure ulcer assessment forms, giving a response rate of only 39.1%. The median age was 57 years (Range 14 to 92 years), of which 54% were male. Twenty-nine patients (20.4%) had pressure ulcers, which was a 13 times increased in prevalence compared to the audit from 2011. The most common sites for pressure ulcers were buttock, sacrum and heel. There was an increasing trend observed with increasing age and Braden risk scores. **CONCLUSION:** There was a huge increase in pressure ulcer prevalence in RIPAS Hospital from 2010 to 2015. The high prevalence of pressure ulcers should trigger action to improve risk assessment, preventive interventions and management of pressure ulcers.

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Key Words: Braden Scale, Inpatients, Pressure Ulcer, Prevalence, Risk Assessment.

INTRODUCTION

Pressure ulcers are areas of localised damage to the skin and underlying tissue, usually over bony prominences. They are associated with pain, prolonged hospital stay, poor quality of life and increased morbidity and mortality.[1] Risk stratification of patients using tools such as the Braden Scale permits proactive planning of interventions to reduce the risk of pressure ulcers developing.[2]

A previous audit conducted in 2011 identified a surprisingly low prevalence of pressure ulcers among medical inpatients of only 1.6% in Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital.[3] The audit also identified associated risk factors such as older age groups, co-morbidities and impaired mobility among those who developed pressure ulcers during their hospital stay.[3] Reported prevalence rate of pressure ulcers varies from 2% to as high as 25% in those of older age groups.[4-6] However in the recent years, there has been rising concerns that pressure ulcers were increasingly encountered among medical inpatients in RIPAS Hospital. As there is currently no ongoing process for proactive screening or surveillance of pressure ulcers in RIPAS hospital, further study to identify the rate of pressure ulcers in the medical wards was warranted. Thus the aim of this study

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was to evaluate the current prevalence rate and risk of developing pressure ulcers among medical inpatients in RIPAS Hospital using the Braden Scale.

MATERIALS AND METHODS

This was a prospective audit study conducted as part of the RIPAS hospital annual audit in 2015. This audit assessed all medical ward inpatients (Acute Medical Unit (AMU), Ward 14, Ward 16, Ward 17, Ward 19, Ward 20, Ward 21 and Ward 22) for a period of 1 week from 11 to 17 November 2015. Data were collected in Pressure ulcer assessment (PUA) forms, which included patient hospital identifier (BN number), patient demographics such as age and gender, the Braden Scale pressure ulcer risk assessment tool, details of pressure ulcers based on nursing assessment (if any) and prevention strategies used. Patients' names were not included to maintain confidentiality. PUA forms were compiled by the nurse in charge and collected a week after completion of the audit period. Forms completed after the audit week were excluded from the analysis.

The Braden Scale assesses patient risk of developing pressure ulcers by examining six criteria: sensory perception, moisture or incontinence, activity, mobility, nutrition and friction or shear, which should be routinely assessed on admission and if there are any changes in patient conditions.[2] Braden Scale were categoried into 'Very High Risk (Score ≤9)'; 'High Risk' (Score 10 to 12); 'Moderate Risk' (Score 13 to 14); 'Mild Risk (Score 15 to 18) and 'No Risk' (Score 19 to 23). Half hourly training sessions for using the Braden Scale was provided by a nurse from the Geriatrics Unit to all medical wards staffs. At each session, the nurse in charge was present, who would update their staff nurses regarding pressure ulcer risk assessment and helped to disseminate information regarding the use of Braden Scale. A detailed description of each of the Braden Scale risk factors was also provided to each ward for their reference.

The patient lists for the medical wards were printed out from the Brunei-Health Information Management electronic record system (Bru-HIMS) daily during the audit period. The numbers of individual patients in the medical wards were counted manually. As pressure ulcer risk assessment should be performed for all admissions and ward transfers, patient encounters consisted of patients presented on each ward at the start of the audit period and any new patients admitted or transferred to each ward.

Data from the PUA forms were entered into an Excel Spreadsheet and analysed. Descriptive statistics were used to summarise the characteristics of patients included in the study. The response rate was calculated as the proportion of forms completed for total patient encounters.

RESULTS

There were 279 inpatients or 363 inpatient encounters on the medical wards during the week; consisting of 279 individual inpatients and 84 ward transfers. A total of 142 Braden Scales were completed, representing a response rate of 39.1% for inpatient encounters. The response rate was variable between wards, ranging from 14.0% in AMU to 78.6% in Ward 17 (Table 1).

Table 1: Response rate from each medical ward in RIPAS Hospital.

Wards	Total Patient Encounters	Completed Braden Scales	Response Rate (%)
AMU	114	16	14.0
Ward 14	60	21	35.0
Ward 16	13	7	53.8
Ward 17	14	11	78.6
Ward 19	56	23	41.1
Ward 20	40	20	50.0
Ward 21	40	25	62.5
Ward 22	26	19	73.1

Table 2: Braden Scale Risk Factors.

Risk Factors	Braden Scale			
	1	2	3	4
Sensory Perception	**Completely Limited** 1 (0.7%)	**Very Limited** 17 (12.0%)	**Slightly Limited** 35 (24.6%)	**No Impairment** 89 (62.7%)
Moisture/ Incontinence	**Constantly Moist** 3 (2.1%)	**Very Moist** 19 (13.4%)	**Occasionally Moist** 29 (20.4%)	**Rarely Moist** 91 (64.1%)
Activity	**Bedfast** 50 (35.2%)	**Chairfast** 27 (19.0%)	**Walks Occasionally** 22 (15.5%)	**Walks Frequently** 43 (30.3%)
Mobility	**Completely Immobile** 21(14.8%)	**Very Limited** 45 (31.7%)	**Slightly Limited** 25 (17.6%)	**No Limitation** 51 (35.9%)
Nutrition	**Very Poor** 5 (3.5%)	**Probably Inadequate** 19 (13.4%)	**Adequate** 57 (40.1%)	**Excellent** 61 (43.0%)
Friction and Shear	**Actual Problem** 41 (28.9%)	**Potential Problem** 34 (23.9%)	**No Apparent Problem** 67 (47.2%)	

Among the 142 patients with completed Braden Scales, median age was 57 years (Range 14 to 92 years). There were 77 (54.2%) male and 65 (45.8%) female patients. The Braden Scale risk factors most prevalent were friction and shear, activity level and immobility (Table 2).

There were 29 patients with identified pressure ulcers, or 20.4% of the patients with completed pressure ulcer assessment forms. Prevalence of pressure ulcers increases with increasing age with a clear increasing linear upward trend as shown in Figure 1. Similar prevalence of pressure ulcers increases with Braden Scale risk categories with a clear increasing upward trend, although nine patients categorized as 'No Risk' and 'Low Risk' according to Braden Scale also developed pressure ulcers while in hospital (Figure 2).

Pressure ulcers occurred most commonly in the buttock, followed by sacrum and the heel (Table 3). Documented prevention strategies used by nurses for the patients were regular turning in 27 (19.0%) cases, ripple mattress were used in 29 (20.4%) cases, heel pad in 8 (5.6%) cases and wheelchair cushion in 1 (0.7%) case.

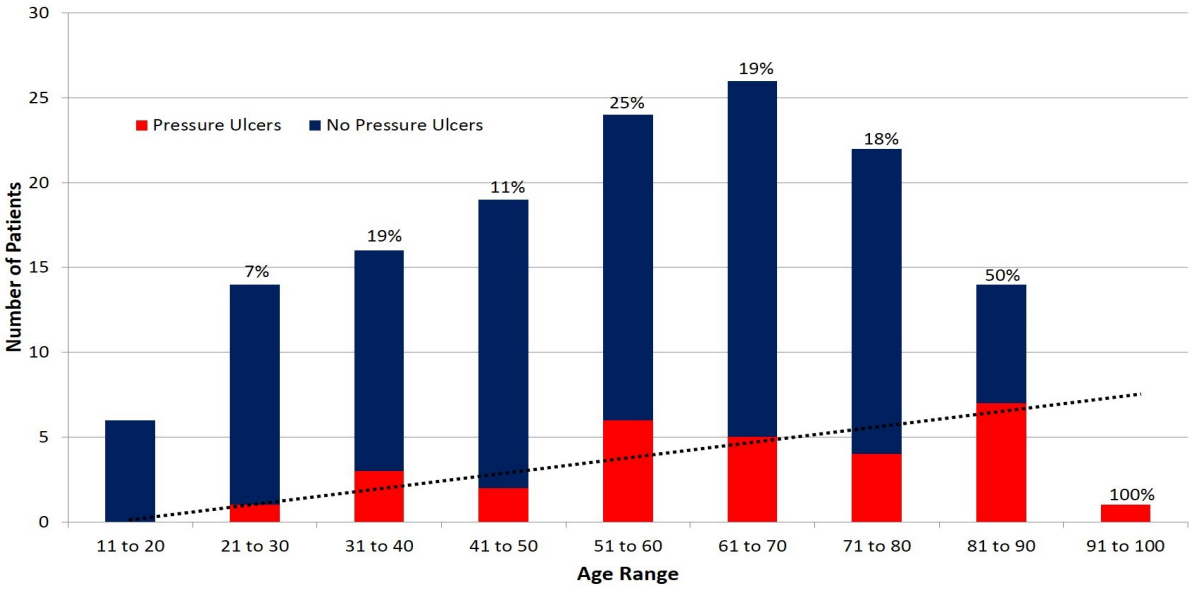

Figure 1: Presence of Pressure Ulcers According to Age. Prevalence rate increases with age with an increasing linear upward trend.

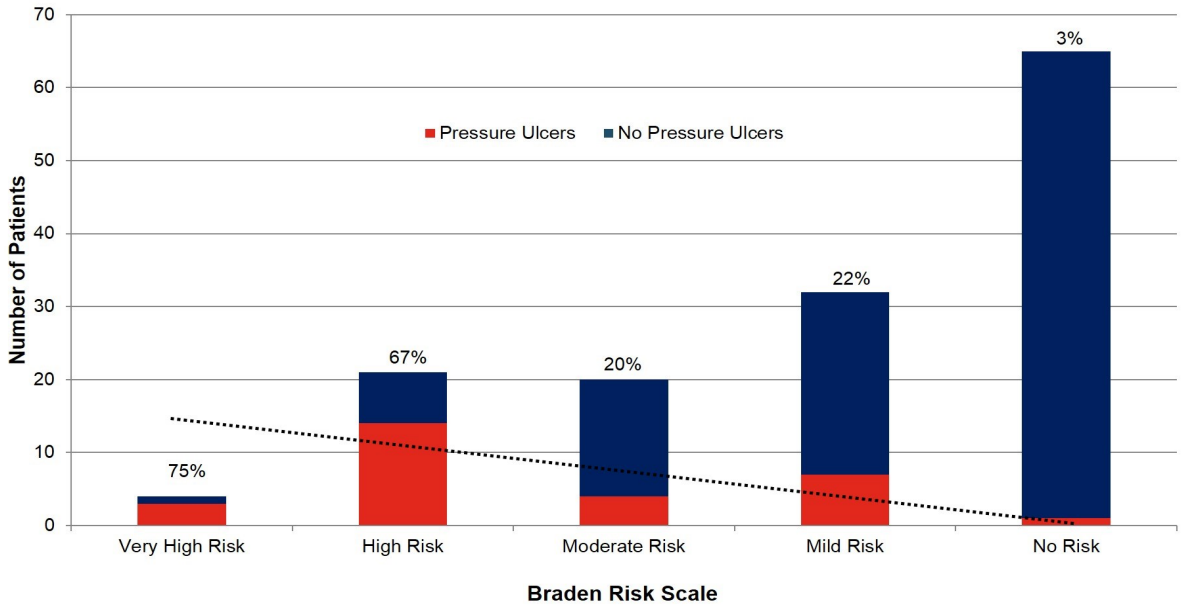

Figure 2: Presence of Pressure Ulcers According to Braden Scale risk categories. Prevalence of pressure ulcers increases with increasing Braden Scale risk categories with prevalence rate of 67% to 75% in those with High Risk to Very High Risk groups.

DISCUSSION

The results from this retrospective review confirmed the suspicion that there is an increase in prevalence of pressure ulcers in medical inpatients of RIPAS Hospital (compared to the previous study in May 2010).[3] A Malaysian observational study for geriatrics admissions identified a pressure ulcer prevalence rate of 15.5% among older inpatients, of which 11.1% were pre-existing on admission and 4.4% acquired while in hospital.[4] Hospital Selayang had a prevalence of 4.05% and 2.05% in their medical and surgical wards respectively.[5] A multi-centre study of four Indonesian hospitals had a prevalence of 8%, of which almost half were present before admission.[7] Therefore, the 20.4% prevalence is higher than hospitals in neighbouring countries. It is unclear what proportion of our patients had pre-existing pressure ulcers, as the pressure ulcer assessment form was not routinely completed on admission.

There was a low response rate for completing the pressure ulcer assessment form. It is recommended to perform a standard structured risk assessment as soon as possible within a maximum of eight hours after admission.[8] As the Braden Scale risk assessment tool is quite new to nursing staff locally, further educational sessions and reminders, including audits of compliance will be required to improve its uptake in this hospital.[9]

The individual risk factors on the Braden Scale should be assessed and intervention planned for each component to reduce pressure ulcers. Some interventions should be implemented for all inpatients, not

Table 3: Type of pressure ulcers and location.

	Buttock	Sacrum	Heel	Calves	Occipital	Foot (Not Specified)
Grade 1	10	-	3	1	1	-
Grade 2	4	3	1	-	-	-
Grade 3	1	4	1	-	-	1
Grade 4	1	2	-	-	-	-
Suspected Deep Tissue Injury	-	-	-	1	-	-

just those at risk. While only 14% were documented as completely immobile, 35% of the patients were on bed rest. Patients should be generally encouraged to remain physically active while in hospital unless there are clinical reasons for strict bed rest.

When comparing pressure ulcers prevalence according to the Braden Scales, a proportion of patients deemed no risk to moderate risk also developed pressure ulcers. The Braden Scale has sensitivity between 70 to 100%, which is appropriate for a screening tool to over-predict the risk of developing pressure ulcers.[10] Usually, there is also a high inter-rater reliability for registered nurses but not nursing assistants or a 'licensed practical nurse', possibly due to training or experience with pressure risk assessment tools.[11] Further educational sessions for nurses in our facility on these assessment tools may be required to improve identification of at risk patients.

It is unclear whether risk assessment translates to taking appropriate prevention measures or implemented only after the pressure ulcers have been identified. Similarly, it is not possible to comment on whether the pressure ulcers are optimally managed to promote wound healing. These aspects of care for these patients should also be reviewed as possible targets for intervention.

We propose a few hypotheses for the increase in prevalence rate of pressure ulcers. Firstly, the previous local study had pressure ulcers identified by doctors, while 'nursing staff of each ward were unaware of the study'.[3] The previous prevalence rate may be an underestimate, as nurses are highly involved in patient cares and are possibly more likely to identify incident pressure ulcers. Secondly, there could be increased risk of developing pressure ulcers in hospital with the increasing older population and improved survival of patients with chronic disease and poor functional status. Thirdly, studies in this region showed a significant proportion of patients (72 and 42% respectively) were admitted with pressure ulcers.[5,7] Community services to manage them should be developed, otherwise there will be an inclination to admit all these patients to hospital to seek treatment.

Study limitations

There are several limitations in this current study which may influence the observed results. Firstly, the audit was completed over a 1 week period which may be too short for the prevalence rate to stabilize. The high prevalence rate observed may be due to a high peak rate during the audit period and a longer duration of audit may average out the prevalence rate. Secondly, the low response rate of only 39% may also significantly affect the observed results. With a best case scenario if the response rate was 100% and only 29 patients developed pressure ulcers, then the prevalence rate will be in the order of 8%, which perhaps is still higher than previously reported.[3]

CONCLUSION

In conclusion, this audit study confirmed that there has been an increase in pressure ulcer prevalence in RIPAS Hospital from 2010 to 2015. Aspects of care that needed to be reviewed to reduce this risk include regular assessment of pressure ulcer risk, preventative strategies for those identified as at risk and management of pressure ulcers to facilitate rapid wound recovery.

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DISCLOSURE

All authors have contributed to the manuscript equally. None of the authors have direct or financial conflicts of interest.

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