



Original Article

Incidence of Hospital-Acquired Pressure Injury among Adult Inpatients at Kakamega County General Hospital, Kenya

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A hospital-acquired pressure injury is a largely preventable adverse health event, which has remained high volume and high cost globally hence a significant concern in healthcare. This study used a prospective cohort model between April and July 2021 to determine the incidence of these injuries among adults at the Kakamega County General Hospital in Kenya, thus informing the need for scaled-up intervention strategies to eliminate these preventable harms on patients receiving care in line with international patients' safety goal. Eighty participants above 18 years of age, systematically drawn from the male and female medical, surgical, and orthopaedic hospitalisation units, were followed up through their hospital stay for the development of pressure injury. Sociodemographic characteristics, units of hospitalisation, diagnosis and clinical variables were studied and outcomes were recorded, coded, and analysed on the statistical package for social sciences version 26. This study found an overall incidence rate of 15%, with men at 17.5% against women at 12.5%. The most affected site was the sacrum region accounting for 35.7% of all cases, with a mean day of occurrence at 5.58 days post-hospitalisation. This high incidence signifies pressure injury as a threat to healthcare quality, equity, and cost in Kakamega and Kenya. The Ministry of Health should therefore adopt, customise, and implement the international guidelines on pressure injury to curb this menace. A multidisciplinary approach should be used, prioritising patients at increased risk and providing suitable prevention and treatment from the earliest opportunity.

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INTRODUCTION

Pressure injury, popularly known as pressure ulcers or bed soreness, is localised skin and/or underlying soft tissue damage from intense unrelieved pressure in combination with shear and/other conditions (National Pressure Ulcer Advisory Panel, 2009). The injured part, usually in areas of bone prominence, may remain with intact skin or break into painful ulceration that is prone to infections (Edsberg *et al.*, 2016). Intense and prolonged pressure is considered the single major player in the formation of a pressure injury, besides factors that influence tissue tolerance (NPUAP, 2011).

The development of pressure injury is relatively common including in hospitals and compounding care (Catherine *et al.*, 2009). Data extracted from the 2019 Global Burden of Disease Study (GBD) revealed a burden of 11.3 persons per 100,000 populations globally and 4 cases per 100,000 populations in Eastern Sub-Saharan Africa (Xianghong *et al.*, 2021). A review of epidemiological studies in Europe, Canada and the USA summarised the reported prevalence of pressure ulcers in European hospitals as ranging from 8.3% to 23% (Catherine *et al.*, 2009; Ahmad *et al.*, 2018). The incidence similarly has been on the increase, recording an 80% increase between 1995 and 2008, with 2.5 million patients developing a pressure injury annually in the US alone

(Catherine *et al.*, 2009; Gyeong *et al.*, 2019; Ahmad *et al.*, 2018; VanGilder *et al.*, 2017).

Cost-wise, pressure injury is imposing a huge financial burden on the healthcare system, costing about 11 billion US dollars in the United States alone per year, with the cost of care on individual patients ranging between \$20,900 to \$151,700 per pressure injury as reported by the Department of Health and Human Services, Centres for Medicare & Medicaid Services in 2008 (Brem *et al.*, 2010). Considering this level of financial demand, pressure injuries not only impact the health and quality of life for the patient and their family but also cause considerable financial strain on the patient, their family, and the health care system hence a big concern (Squitieri *et al.*, 2018).

There is limited research and scanty publications on this important topic in Kenya, particularly in Kakamega County. It is therefore impossible to determine the burden with an acceptable level of certainty from existing literature. Nangole, in 2003, conducting a study at Kenyatta National Hospital (KHN) and the National Spinal Cord Injury Hospital (NSCIH), established an overall prevalence of 5.5% in Kenya, with up to 68% in patients admitted at the NSCIH (Nangole *et al.*, 2009). This is likely to be higher today if the trends established in Canada, the UK, the USA, and other

places are to go by (VanGilder *et al.*, 2017; Gyeong *et al.*, 2019).

This study aimed to objectively evaluate the local epidemiology of hospital-acquired pressure injury, focusing on the incidence among adult inpatients at Kakamega County General Hospital (KCGH). This is a requirement for the implementation of the international guidelines for the prevention and treatment of pressure injury/ulcers (EPUAP, NPIAP, & PPIA, 2019) towards safe hospitalisation (JCI, 2019). This will inform the need for enhanced pressure injury prevention and strengthen management strategies for safer hospitalisation, improving equity, quality, and affordability of healthcare, propelling UHC, which is a flagship project of the 'Big Four' agenda of the Republic of Kenya 2017-2022 (Wangia & Kandie, 2019; Edwine *et al.*, 2019; PSC, 2018).

Study Objective

The objective of this study was to determine the incidence of hospital-acquired pressure injuries among hospitalised adult patients at the Kakamega County General Hospital (KCGH). Specifically;

1. To determine the incidence of hospital-acquired pressure injury among hospitalised adult patients at the KCGH.
2. To identify the body site(s) commonly affected by pressure injury among hospitalised adult patients at the KCGH.

METHODOLOGY

Study Area

This was a single-site study conducted from April 20 2021 to July 20 2021, at the Kakamega County General Hospital in Kakamega County (KCGH) in the western region of Kenya. The KCGH is a public referral health facility serving a large and diverse population and has a wide range of medical and clinical services.

Study Design

A prospective cohort study design was employed. The cohorts were recruited at the time of admission and followed up during the hospitalisation period for the development of stage 2 or above pressure injury.

Target Population

Adults admitted in the orthopaedic wards, medical wards, and surgical wards, with the expected hospital stay lasting at least five days, were targeted.

Exclusion Criteria

Patients with pressure injuries present on admission.

Sampling

The minimum sample size was determined using the Cochran formula (Nam, 1992) plus an attrition rate of 10%. The sample was then corrected for a definite population and distributed proportionally across the three selected hospitalisation units. Every even number of admission in the units meeting the inclusion criteria was selected until the desired population size was achieved.

Table 1: Sample Distribution

Hospitalisation Unit	Target Population (N)	Calculated size	Sample	Actual sample Obtained (n)
Medical Ward	150	24.13		26
Surgical Ward	218	35.07		38
Orthopaedic Ward	92	14.80		16
Total	N = 460	74 ^a		n = 80

^aMinimum sample size

Data Collection and Analysis

A questionnaire coupled with a comprehensive observation and examination checklist was used to gather the required information from the uniquely identified consenting study participants. Demographic data, clinical information, and complete skin examination findings were captured at admission. Re-examination and skin check for pressure injury development were done every 48 hours during hospitalisation until a stage 2 or above pressure injury developed or the patient was discharged.

The collected data were coded and analysed on a statistical package for social sciences (SPSS) version 26.0. This was then presented using tables and charts.

RESULTS

Sociodemographic Characteristics

A total of 80 patients, 40 males and 40 females, participated in the study, drawn proportionally from

the three hospitalisation units. The surgical ward contributed the highest number ($n = 38$; 47.5%), while the orthopaedic ward had the least ($n = 16$; 20.0%). The medical wards had a higher proportion of females, while the orthopaedic unit had more males. The youngest was 20 years old, with the oldest at 87 years of age (mean 50.9; 17.8). The mean age (SD) was 53.9 (16.52) in the surgical ward, 44.1 (20.24) in the orthopaedic ward, and 50.8 (17.5) in the medical ward. Most of the participants had beyond primary education ($n = 49$; 61.25%), a few of whom had beyond secondary education ($n = 15$; 18.75%). More males had tertiary education (male 11; 27.5% - female 4; 10%), with more females with only up to primary education (male 13; 32.5% - female 18; 45%). Whereas a big proportion of the participants were employed, most of them were in the informal sector ($n = 52$; 65.0%). More females were in employment compared to males; however, more males were in formal employment ($n = 8$; 20%) compared to females ($n = 4$; 10%).

Table 2: Distribution of participants by sociodemographic characteristics

Variables		Male		Female		Total	
		n	%	n	%	n	%
Hospitalisation Unit	Medical	12	30	14	35	26	32.5
	Surgical	19	47.5	19	47.5	38	47.5
	Orthopaedic	9	22.5	7	17.5	16	20
Age (in years)	Mean (SD)	48.8	(18.13)	53	(17.4)	50.9	(17.8)
Age (in years) grouped	<30	6	15	5	12.5	11	13.75
	31 – 40	10	25	7	17.5	17	21.25
	41 – 50	7	17.5	7	17.5	14	17.5
	51 – 60	7	17.5	8	20	15	18.75
	61 – 70	2	5	7	17.5	9	11.25
	71 – 80	5	12.5	1	2.5	6	7.5
	>80	3	7.5	5	12.5	8	10
Level of Education	Primary	13	32.5	18	45	31	38.75
	Secondary	16	40	18	45	34	42.5
	Tertiary	11	27.5	4	10	15	18.75
Source of Income	Unemployed	9	22.5	7	17.5	16	20
	Employed – Informal	23	57.5	29	72.5	52	65
	Employed – Formal	8	20	4	10	12	15
	TOTAL	40		40		80	100

Sociodemographic Distribution of Cases

12 out of the 80 participants developed a pressure injury. Gender-wise, 7 HAPI cases occurred in males (58.3%). Whereas the average age of participants was 50.9(17.8) years, the 12 who developed pressure injuries had a higher mean age of 60.4(14.7) years. 58.3% of cases had primary education (n=7), 33.3% had secondary education (n=4), and only 8.33% had tertiary education.

88.3% of cases occurred among the employed participants, 9 (75%) of whom were in informal employment. 41.7% (n=5) were admitted to the medical ward, while a slightly higher number, 50% (n=6), occurred in the surgical ward. Moreover, more cases occurred among the normal-weight participants, 75% (n=9), compared to 8.1% and 16.7% among the overweight and the underweight, respectively.

Table 3: Participants' Socio-Demographics and Outcome

Variable		Total n = 80	Without HAPI n = 68	With HAPI n = 12	P-value
Female sex		40(50)	35(51.5)	5(41.7)	0.53
Age, mean (SD)		50.9(17.8)	49.2(17.8)	60.4(14.7)	0.04
Education level	Primary	31(38.8)	24(35.3)	7(58.3)	0.36
	Secondary	34(42.5)	30(44.1)	4(33.3)	
	Tertiary	15(18.8)	14(20.6)	1(8.33)	
Employment status	Formal	12(15)	11(16.18)	1(8.3)	0.90
	Informal	52(65)	43(63.2)	9(75)	
	Unemployed	16(20)	14(20.6)	2(16.7)	
Hospitalisation unit	Medical	26(32.5)	21(30.9)	5(41.7)	0.60
	Orthopaedic	16(20)	15(22.1)	1(8.3)	
	Surgical	38(47.5)	32(47.1)	6(50)	
Body mass index	Underweight	18(22.5)	16(23.3)	2(16.7)	0.87
	Normal weight	56(70)	47(69.1)	9(75)	
	Overweight	6(7.5)	5(7.4)	1(8.3)	

Note: Chi-square tests were calculated between with/without HAPI and the variables.

Abbreviations: HAPI, Hospital-acquired pressure injury, SD, standard deviation

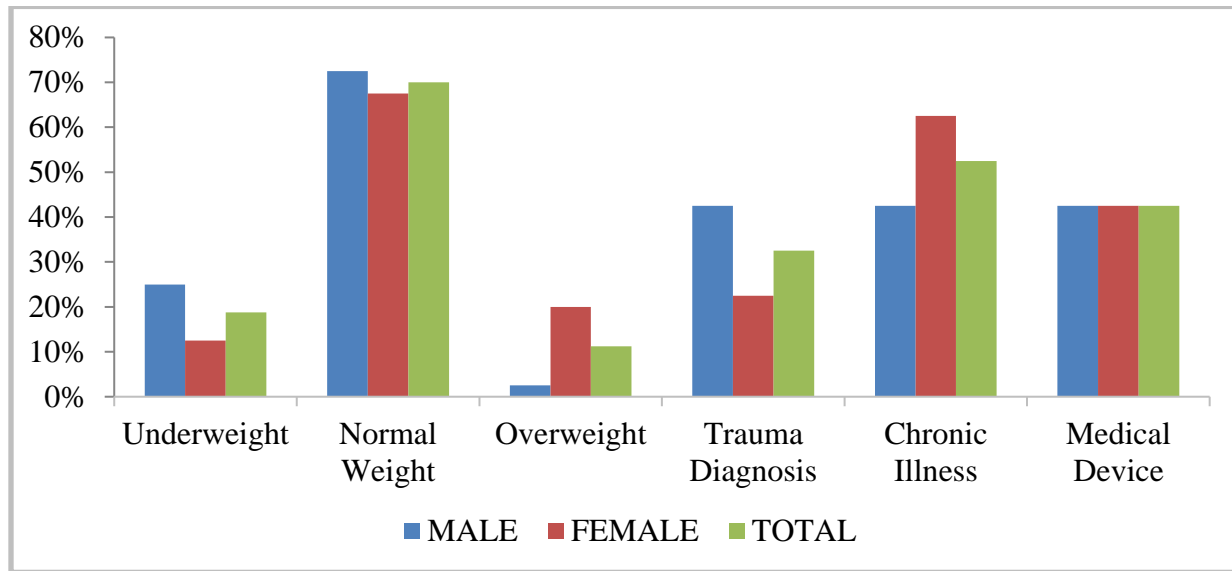
Clinical Characteristics

BMI, which factors weight and height, was used to classify the participants' weight. 56 (70.0%) had normal weight (BMI 18.5 – 24.9), 18 (22.5%) were underweight (BMI <18.5) of whom 67% were males, while 6 (7.5%) were overweight (BMI ≥25.0) of whom 89% were females. The main primary diagnosis was trauma (n = 26; 32.5%), which was more prevalent in the males (n = 17; 42.5%) compared to females (n = 9; 22.5%), followed by gastrointestinal pathologies (n = 12; 15.0%) and respiratory pathologies (n = 11; 13.8%).

42 (52.5%) patients had a chronic illness besides the primary diagnosis, 59.5% of whom were female. Most of the chronic cases were hypertensive (n = 8; 10.0%), diabetes mellitus and hypertension co-infection (n = 7; 8.8%), and tumours (n = 6; 7.5%). A fair proportion of the participants had a medical device (n = 34; 42.5%). A Foley catheter was the most common medical device recorded (n = 24; 70.6%).

From the chart below, it is clear that more men had a trauma diagnosis; however, more women had a chronic illness and were also overweight.

Figure 1: Participants' Clinical Characteristics



Clinical Characteristics and Outcome

With respect to the clinical condition of the participants, HAPI cases were fairly distributed, with 16.2% of cases (n = 2), each occurring among those principally diagnosed with gastrointestinal, neuromuscular, and urogenital pathologies. 41.7% (n = 5) of cases, however occurred among the

trauma diagnosis category. 58.3% (n = 7) of cases had no chronic illness, while 25% (n = 3) had diabetes mellitus (DM)/Hypertension (HTN) co-infection. Further, 8.3% (1) had DM/renal failure co-infection and malignancy. 83.3% (n = 10) had a medical device on them, including 7 with Foley catheter, 1 having both catheter and nasal-gastric (NG) tube, and another 2 having NG tube.

Table 4: Clinical Characteristics and outcome

Variable		Total N = 80	Without HAPI N = 68	With HAPI N = 12	P- Value
Principal diagnosis	Cardiovascular	2(2.5)	2(2.9)		
	Endocrine	1(1.3)	1(1.5)		
	Gastrointestinal	12(15)	10(14.7)	2(16.7)	
	Neuromuscular	7(8.8)	5(7.4)	2(16.7)	
	Respiratory	11(13.8)	11(16.2)		
	Septicaemia	3(3.8)	3(4.4)		
	Trauma	26(32.5)	21(30.9)	5(41.7)	
	Tumoral	5(6.3)	5(7.4)		
	Urogenital	9(11.3)	7(10.3)	2(16.7)	
	Others	4(5)	3(4.4)	1(8.3)	
Presence of chronic illness		42(52.5)	37(54.4)	5(41.7)	0.47
Type of chronic illness	Chronic respiratory disease	4(5)	4(5.9)		
	Diabetes mellitus	2(2.5)	2(2.9)		
	DM/HTN co-infection	7(8.8)	4(5.9)	3(25)	
	DM/renal failure co-infection	1(1.3)		1(8.3)	
	HTN/other co-infection	3(3.8)	3(4.4)		
	Hypertension (HTN)	8(10)	8(11.8)		
	Malignancy	6(7.5)	5(7.4)	1(8.3)	

Variable	Total N = 80	Without HAPI N = 68	With HAPI N = 12	P- Value
Other	6(7.5)	6(8.8)		
Renal failure	1(1.3)	1(1.5)		
Renal failure/HTN	1(1.3)	1(1.5)		
RVD	3(3.8)	3(4.4)		
None	38(47.5)	31(45.6)	7(58.3)	
Medical device present	34(42.5)	24(35.3)	10(83.3)	0.00
Medical device				0.01
Catheter	24(30)	17(25)	7(58.3)	
Catheter/NG tube	1(1.3)		1(8.3)	
Chest tube	1(1.3)	1(1.5)		
NG tube	3(3.8)	1(1.5)	2(16.7)	
Ortho padding	1(1.3)	1(1.5)		
Oxygen mask	2(2.5)	2(3.0)		
Splint/plaster	1(1.3)	1(1.5)		
Strapping	1(1.3)	1(1.5)		
None	46(57.5)	44(64.7)	2(16.7)	

Note: Chi-square tests were calculated between with/without HAPI and the variables.

Abbreviations: HAPI, Hospital-acquired pressure injury, DM, diabetes mellitus, HTN, hypertension, NG, nasogastric, RVD, retroviral disease

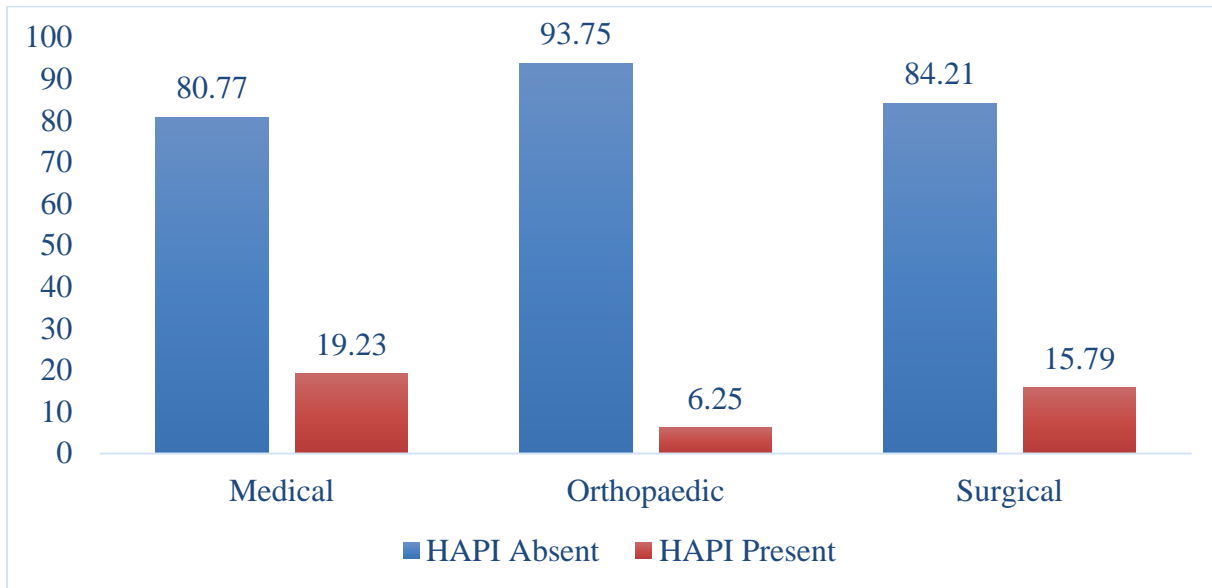
Incidence of Hospital-Acquired Pressure Injury

15% of all the participants developed Pressure Injuries, n = 12. 6 cases occurred in the surgical ward, 5 in the medical ward, and 1 in the orthopaedic ward. Though the key informants generally agreed that pressure injury is more common in the surgical and medical wards, their estimates were much lower, with the highest at 6%. “Those injuries rarely occur in this hospital. Maybe in the surgical ward where about six in a hundred cases may occur on bad days...” reported one. 58.3% of the cases were males (n = 7). 66.7% were aged above 50 years (n = 8). 58.3% of cases had primary education (n = 7), with 75.0% being in informal employment (n = 9). Most cases had

normal weight (n = 9; 75.0%), with trauma being the most prevalent principal diagnosis among cases (n = 5; 41.7%) and 41.7% having a chronic illness (n = 5). Diabetes/hypertension co-infection was the common chronic illness in cases (n = 3; 25.0%), 83.3% had a medical device (n = 10), and a similar proportion was from the high-risk cohort. Medical and surgical wards had an incidence rate above the overall 15%, at 19.3% and 15.8%, respectively.

Most of KIs believed bed-ridden patients were the ones at highest risk of pressure injury, especially when they are aged and stay long in the hospital. “We do not have bed-ridden patients here. Also, we discharge within a week or so, therefore getting a bed sore in this ward is very difficult,” said W.

Figure 2: Incidence of HAPI in hospitalisation units

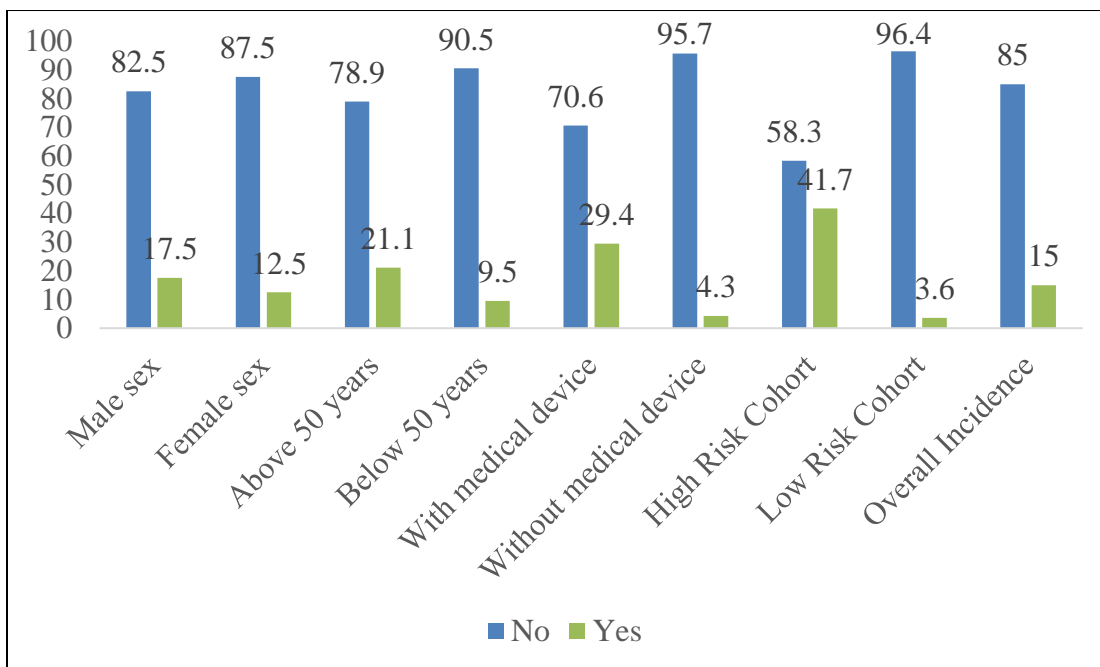


The incident rate was also higher in males (17.5%) than in females (12.5%). Among participants aged above 50 years, the incidence rate was 21.1%, compared to 9.5% in those aged 50 years and below. Participants with a medical device had an incidence of 29.4%, which is very high compared to those without a medical device, whose incidence was 4.3%. The incidence rate in the high-risk cohort

(according to Braden’s risk score) was 41.7% compared to 3.6% for the low-risk category. Since diagnosis is usually made clinically, some cases are likely to go unnoticed. “When you don’t see a wound or a blister, you can’t report that...” said Z.

Hospital-Acquired Pressure Injury

Figure 3: Incidence of HAPI



Body Site Affected by HAPI

The 12 cases had a total of 14 pressure injuries occurring at seven locations; sacrum, ischium, greater trochanter, coccyx, heel, malleolus, and scapula regions of the body. Three cases were reported by day three of admission, one occurring on the sacrum, ischial tuberosity, and coccyx each. The fourth day had the highest number of cases, 28.6% (n = 4), spread across the malleolus and the heel, each reporting one injury and two in the sacrum. One PI in the sacrum was reported on the fifth day. The sixth day registered three additional injuries occurring on the sacrum, ischial tuberosity, and greater trochanter, respectively. The seventh, eighth and thirteenth days registered one injury

each, occurring on the heel, scapula, and coccyx, respectively.

35.7% (n = 5) of the injuries occurred on the sacrum, four in male patients, with only one occurring in the female. Ischial tuberosity, coccyx and heel had 14.3% (n = 2) of pressure injury each. All the ischial injuries occurred in females. The greater trochanter, the malleolus and the scapula recorded 7.1% (n = 1) of the injuries each. Whereas the highest number of injuries, 28.6% (n = 4) were recorded on day 4 post-admission, days 3 and 6 also registered high numbers of 21.4% (n = 3) each. The rest of the days (5th, 7th, 8th, and 13th) reported a single incidence each. The earliest PI was developed by day 3 with the latest recorded by day 13 (mean 5.58; SD 2.81).

Table 5: Body sites affected by HAPI

DAY/ SITE	Sacrum	Ischia Tuberosity	Greater trochanter	Coccyx	Heel	Malleolus	Scapula	Count
Day 3	•	•		•				3
Day 4	••				•	•		4
Day 5	•							1
Day 6	•	•	•					3
Day 7					•			1
Day 8							•	1
Day 13				•				1
Total	5	2	1	2	2	1	1	14
%	35.7	14.3	7.1	14.3	14.3	7.1	7.1	100

KEY: • Pressure injury

DISCUSSION

Incidence

The incidence of hospital-acquired pressure injury in this study, 15%, shows that more than one of every ten adult patients admitted at KCGH ends up with HAPI, avoidable harm while receiving care. This number is quite elevated, almost twice as high, in comparison to pooled global incidence of 8.4% from a 2020 systematic review and meta-analysis and over ten times higher compared to findings from some developed countries like Sweden (Zhaoyu *et al.*, 2020). Nevertheless, this incidence is quite similar to findings from most developing countries, like Nigeria, where Onigbinde and team recorded an incidence of 13.8% in a single-site study (Onigbinde *et al.*, 2012). Such high incidence made Harvey

describe HAPI as a low-income country scourge (Harvey, 2017).

The differences in population, healthcare set-up studied, and the period when the study was conducted mostly account for the variations in the incidence of HAPI (Zhaoyu *et al.*, 2020), but, according to Harvey, the poor socioeconomic indicators in the low-income countries translate to poor health outcomes ahead of hospitalisation (Harvey, 2017). Low-income countries, Kenya included, have poor health infrastructure and inadequately qualified healthcare staff, affecting access and quality of healthcare and increasing susceptibility to pressure injury (Matozinhos *et al.*, 2017). Most patients in the study had below tertiary education (81.2%) and a majority were in informal employment (65.0%), which is characteristic of low-income countries. The incidence was quite high

among those with only up to primary education (22.5%) and those in informal employment (17.3%), compared to those with tertiary education (6.7%) and formal employment (8.3%). Level of education and income influence one's choice on matters of health, including the choice of when and where to seek health services (WHO, 2005). Low education and low-income results in limited information, poor nutrition, and little social support and are a hindrance to access to quality healthcare and correct choices on personal health even prior to hospitalisation, resulting in increased morbidity and increased risk of pressure injury (Harvey, 2017), similar to the findings of this study.

More males (17.5%) developed HAPI in this study compared to females (12.5%), contrary to findings from systemic review studies that found negligible differences in the occurrence and development of pressure injuries in males and females (Coleman *et al.*, 2013). This result somehow reflects findings in Kenya, where about twice as many males (68%) had PI compared to females (32%) (Nangole *et al.*, 2009). This difference can be attributed to gender stereotypes in nursing which could influence care and intervention (Macdonald & Bridge, 1991), where female patients are likely to receive better care compared to their male counterparts. Gender morbidity and mortality paradoxes may as well explain such gaps (Archana Singh-Manoux *et al.*, 2008).

The average age of patients with pressure injury was relatively high (60.4; 11.2) with an incidence of 25% among the aged (≥ 60 years). This is consistent with other findings that established an increased risk of pressure injury with increasing age, linked to reduced perfusion and pressure tolerance by the skin (Kayser, VanGilder, & Lanchenbruch, 2019; Borsting, *et al.*, 2018). These findings closely replicate findings from a prospective study by Iranmanesh and team, which reported mean age of 58 years for patients who developed pressure injury, compared to 38 years for patients who did not (Iranmanesh, Rafiei, & Sabzevari, 2012). Old age, especially around 60 years and above is thus a significant intrinsic HAPI risk factor.

The orthopaedic hospitalisation unit, with relatively younger patients, recorded the lowest incidence

(6.3%). The unit hosts mostly younger patients with an average age of 44 years, mostly with minor injuries from road traffic accidents (Langley & Brenner, 2004). These generally have healthier skin, good nutrition, and good circulation that improve skin tolerance to pressure, evading pressure injury (Gorecki *et al.*, 2009). The medical hospitalisation unit recorded high incidence (19.2%), which is common in the population it houses, including aged patients (mean age; 50.7), with prevailing chronic conditions and co-morbidities reducing skin tolerance to pressure and promoting the occurrence of pressure injury (Dinkie *et al.*, 2018). This confirms the age factor and suggests a relationship between HAPI and chronic illness which was however not established in this study.

A relatively higher incidence was also recorded among trauma patients (20%) compared to those with medical cases (12%). Trauma cases are likely to experience impaired neurological activity, immobility, and inactivity, all of which are factors that were noted to increase the risk of pressure injury in this study. This is similar to findings by Molon and Estrella who reported an overall incidence of 20% by the seventh day of a prospective cohort study among orthopaedic, basically trauma patients (Molon & Estrella, 2011).

Body Site Commonly Affected

The sacrum was the most affected body site at a frequency of 35.7% ($n = 5$) of all injuries. This is contrary to findings by Nangole and team (Nangole *et al.*, 2009), who established the trochanteric region as the most frequented by pressure injury (43%), sacral (19.3%) and ischial (10.3%) at Kenyatta National and the Spinal Injury Hospitals. This difference may have resulted from the varying characteristics of the patient populations studied and the fact that their study focused on treatment, capturing all the cases including none hospital-acquired cases. The sacrum tissue lying on the prominent sacral bone bears increased and prolonged pressure as patients mostly lie supine, which may interfere with skin perfusion and promote cellular death and tissue damage, promoting the occurrence of pressure injury. The sacral region is prone to deeper pressure injuries and infection, and the recorded high frequency partly explains the increased morbidity, prolonged

hospitalisation and even mortality in patients who develop HAPI, as also found by Nangole *et al.*, 2009 (Graves, Birrell, & Whitby, 2005). The heel, ischium and coccyx regions had a 14.3% frequency of occurrence of pressure injury.

The anatomical difference in males and females seems to influence the occurrence of HAPI, especially around the pelvis, though this has not been highlighted in the reviewed literature. Factors around obstetrical dilemma giving rise to pubic arch in females, and sacral promontory that is more pronounced in males (Lumelcandela, 2021), is probably the reason for more ischial injuries in female patients and more sacral-coccygeal injuries in male patients. These regions require special attention during the examination and preventive management procedures. This will ensure that the injuries are prevented, otherwise detected early, and managed before progression to advanced stages.

All the pressure injury cases recorded in this study occurred within the first two weeks of hospitalisation, mostly from the third to sixth day. The mean period of occurrence was 5.6 days which is within the first two weeks of hospitalisation, in agreement with findings by (Cox, 2012).

CONCLUSION AND RECOMMENDATION

This single-site prospective cohort study at Kakamega County General Hospital found a relatively high hospital-acquired pressure injury incidence of 15%, compared to a global 8.4%, but much similar to findings from developing countries such as Ethiopia, Iran, Turkey, and some developed nations like Germany. This rate was higher in the medical hospitalisation unit (19.2%) and in males (17.5%). This translates to about two out of every ten patients developing at least a HAPI in the course of their hospital stay.

The sacrum was the most affected site, with a mean period of occurrence at 5.6 days post-hospitalisation. This study, therefore, recommends the adoption, customisation, and implementation of international guidelines on the prevention and treatment of pressure ulcers/injuries both at the county and national levels to lower the incidence (EPUAP, NPIAP, & PPIA, 2019). Also, streamlined efforts, including mandatory reporting

of HAPI as a sentinel event, will increase focus on this neglected menace, promote awareness, and encourage proactive multidisciplinary, evidence-based prevention and treatment. The sacrum region (in all patients) and the ischium (particularly in female patients), among the many parts of bone prominence, should be checked regularly for very early signs of pressure injury occurrence and addressed appropriately to avert deterioration. Other studies should also evaluate HAPI in other local healthcare settings for variations in incidence and prevalence.

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