Prevalence and Correlates of Pain and Pain Treatment in a Western Kenya Referral Hospital

Article *in* Journal of palliative medicine · September 2013

DOI: 10.1089/jpm.2013.0080 · Source: PubMed

9 authors, including:

Claudio Owino
Moi University
8 PUBLICATIONS **44** CITATIONS
SEE PROFILE

Patrick Monahan
Indiana University-Purdue University Indianapolis
95 PUBLICATIONS **2,205** CITATIONS
SEE PROFILE

Robert Matthew Strother
Canterbury District Health Board
55 PUBLICATIONS **688** CITATIONS
SEE PROFILE

JOURNAL OF PALLIATIVE MEDICINE
Volume 16, Number 10, 2013

DOI: 10.1089/jpm.2013.0080

Prevalence and Correlates of Pain and Pain Treatment in a Western Kenya Referral Hospital

Kristin T. L. Huang, MD,[1,2] Claudio Owino, MMED, MHPE,[1,3] Gregory P. Gramelspacher, MD,[1,4] Patrick O. Monahan, PhD,[5] Rebeka Tabbey, MS,[5] Mildred Hagembe, MBChB,[1] Robert M. Strother, MD,[1,4] Festus Njuguna, MMED,[1,6] and Rachel C. Vreeman, MD, MS[1,7]

Abstract

Background: Pain is often inadequately evaluated and treated in sub-Saharan Africa (SSA).
Objective: We sought to assess pain levels and pain treatment in 400 hospitalized patients at a national referral hospital in western Kenya, and to identify factors associated with pain and pain treatment.
Design: Using face-validated Kiswahili versions of two single-item pain assessment tools, the Numerical Rating Scale (NRS) and the Faces Pain Scale–Revised (FPS-R), we determined patients' pain levels. Additional data collected included patient demographics, prescribed analgesics, and administered analgesics. We calculated mean pain ratings and pain management index (PMI) scores.
Results: Averaged between the NRS and FPS-R, 80.5% of patients endorsed a nonzero level of pain and 30% of patients reported moderate to severe pain. Older patients, patients with HIV, and cancer patients had higher pain ratings. Sixty-six percent of patients had been prescribed analgesics at some point during their hospitalization, the majority of which were nonopioids. A majority of patients (66%) had undertreated pain (negative scores on the PMI).
Conclusion: This study shows that hospitalized patients in Kenya are experiencing pain and that this pain is often undertreated.

Introduction

The World Health Organization pain ladder promotes a stepwise approach to pain management to minimize inadequate analgesia.[1] For mild pain it recommends that patients receive acetaminophen or a nonsteroidal anti-inflammatory drug. If the pain persists or if the patient has moderate pain, a weak opioid should be used. For severe pain or pain inadequately treated with weak opioids, a strong opioid should be prescribed.

However, patients around the world suffer from the global inequality of pain relief. In 2006, developed nations consumed most of the world's opioid supply. The global mean of morphine consumption was 5.98 mg per person per year, while the regional mean for Africa was only 0.33 mg.[2] In 2008, 20 sub-Saharan African (SSA) countries reported no morphine use at all.[3]

In addition to disparities of pain relief, there is a dearth of rigorous research on pain management in SSA, especially research that can be translated into clinical practice.[4] Pain assessment and treatment are essential parts of caring for patients, but in SSA there are many barriers to adequate pain control. These include a deficiency of culturally acceptable and validated pain assessment tools; lack of pain management education for clinicians; unavailability of opioids due to national drug policies and unreliable supply chains; underprescribing of pain medication; and difficulty in accessing health care.[2,5–8]

These factors contribute to a high burden of pain in SSA. In cancer patients receiving inpatient or outpatient care in South Africa, 35.7% reported cancer-related pain.[9] Cancer patients in Uganda and South Africa had a pain prevalence of 87.5% in spite of their participation in palliative care services.[10] Similarly, two-thirds of hospice patients in Uganda had

[1]USAID - Academic Model Providing Access to Healthcare (AMPATH), Eldoret, Kenya.
[2]Department of Medicine, Brigham and Women's Hospital, Boston, Massachusetts.
[3]Moi University, College of Health Sciences, School of Medicine, Department of Surgery, Eldoret, Kenya.
[4]Department of Medicine, [7]Department of Pediatrics, Indiana University School of Medicine, Indianapolis, Indiana.
[5]Department of Biostatistics, Indiana University School of Medicine, Indianapolis, Indiana.
[6]Moi Teaching and Referral Hospital, Nandi Road, Eldoret, Kenya.
Accepted May 20, 2012.

experienced extended periods of severe pain before their pain was adequately treated.[11] Prior work in Kenya has also shown that patients often die in pain.[12,13] Beyond actively dying patients and those with fatal malignancies, patients with chronic conditions also experience untreated pain—studies have found the prevalence of pain to be 59% to 98% among HIV/AIDS patients in South Africa, Uganda, and Kenya.[14–17] Research on the correlates of pain in SSA has found that in HIV patients, pain has been associated with increasing age, female gender, not being on antiretroviral therapy, number of symptoms, advanced disease, number of medical comorbidities, and reduced functional performance scores.[18–20] These studies are specific to ambulatory HIV/AIDS patients, and to date no research has been conducted to determine the burden of pain in a mixed inpatient hospital setting in SSA.

The pain experienced by pediatric patients in SSA is especially neglected, with very limited data on this subject.[21,22] Pediatric patients face exclusion from adult palliative care services and reluctance from clinicians to treat children with opioids due to the belief that using morphine amounts to "giving up."[21]

One challenge faced in clinical practice in SSA is the limited number of fully validated pain assessment tools. Our group recently established the face validity of Kiswahili versions of two single-item pain scales, the Faces Pain Scale–Revised (FPS-R) and the Numerical Rating Scale (NRS), in both adults and children through rigorous cognitive interviewing in Kenya.[23] While only the face validity has been formally established, the NRS and a variation of the FPS-R are recommended for national use by the Kenya Hospices and Palliative Care Association.[24] In this study we use these scales to assess the prevalence and intensity of pain in a population of hospitalized patients in western Kenya, and describe the correlates of pain, pain treatment, and undermedication as determined by the Pain Management Index (PMI). We also sought to establish the convergent validity of these two scales as further evidence of their applicability in our setting.

Methods

Setting

Moi Teaching and Referral Hospital (MTRH) is a national referral hospital in Eldoret, Kenya serving western Kenya, with a catchment population of about 11.2 million. The hospital includes full outpatient services and a 500 inpatient bed capacity, although this bed count underestimates the inpatient population, as patients frequently share beds on the wards. The adult medical, pediatric, and surgical wards house 265 of the 500 beds. Patients are admitted for a variety of acute and chronic medical illnesses, including tuberculosis, malaria, HIV, trauma, and cancer. Under the auspices of a cancer treatment program developed through the President's Emergency Plan for AIDS Relief (PEPFAR)-supported Academic Model Providing Access to Healthcare (AMPATH) program, a palliative care team was formed in 2009 to address the needs of cancer patients. However, in the interim three years, this program has expanded to offer symptom management and psychosocial support to patients on the wards regardless of diagnosis.

This study was approved by the institutional research and ethics committee of Moi University School of Medicine and by the institutional review board of Indiana University School of Medicine.

Population

From March to July 2011, hospitalized patients ages five years and older with the ability to speak Kiswahili or English and with the mental and physical capacity to give informed assent (for pediatric patients ages 14 and under) or consent (for adult patients and for parents or guardians of pediatric patients) were asked to participate in this study. Patients were randomly selected using an online random number generator corresponding to inpatient bed numbers on the adult medical, adult surgical, and pediatric wards. To ensure the inclusion of an adequate number of oncology patients we employed a different sampling strategy for these patients. Adult oncology patients are housed throughout the hospital, with about 15 adult and 5 pediatric oncology patients active on the oncology service at any given time. Thus, we recruited any oncology patients listed on the oncology service at the beginning of the study and continued to recruit any additional oncology patients admitted throughout the course of the study to ensure adequate sampling of that population. Verbal, witnessed informed consent and/or assent using a standard consent or assent form was obtained from all participants and their parents or guardians, if applicable.

Pain assessment and data collection

The NRS and FPS-R are two single-item pain assessment tools. The NRS has been found to have high sensitivity and ease of administration compared to similar but nonnumerical scales such as the Verbal Rating Scale and the Visual Analogue Scale.[11,25–28] It is scored from 0 to 10, with 0 being no pain and 10 being the worst pain the patient can imagine. The FPS-R was developed for use in pediatric populations but has been validated in all age ranges, showing the best psychometric properties in comparison to other faces pain scales.[29–34] It consists of six faces in increasing levels of distress and can be scored on the same 0 to 10 scale as the NRS. Our group recently established the face validity of Kiswahili versions of the NRS and FPS-R in this population through rigorous cognitive interviewing.[23] These two pain scales specifically assess a patient's current pain.

The Kiswahili versions of the NRS and FPS-R were administered one time to each child or adult participant to assess current pain at any point after hospital admission. The pain scales were administered by members of the MTRH palliative care team who had been trained in pain assessment and research methodology. Demographic and clinical information for each patient were subsequently gathered through review of the patient's paper hospital record. These data included age, gender, working diagnosis, chronic medical problems, whether any pain medications had been prescribed, and times of pain medication administration within the past 72 hours, if any. The categorization of cancer or suspected cancer was assigned based on a patient's working diagnosis as recorded in the medical chart.

Data analysis

Descriptive statistics for patient characteristics were described as means or medians for continuous variables (e.g., age) and as proportions for categorical variables (e.g., gender). Prescribed analgesics were compared with administered analgesics to determine whether all pain medicines were given as prescribed.

Table 1. Pain Management Index Scoring

PMI pain score	*0 (none)*	*1 (mild pain)*	*2 (moderate pain)*	*3 (severe pain)*
PMI analgesic score				
0 (no pain medicine)	0	−1	−2	−3
1 (nonopioid)	1	0	−1	−2
2 (weak opioid)	2	1	0	−1
3 (strong opioid)	3	2	1	0

The Pain Management Index (PMI) was calculated by subtracting the patient's Pain Score from the patient's Analgesic Score. The PMI Pain Score was derived from the patient's response to the NRS or FPS-R, with a PMI Pain Score of 0 corresponding to a score of 0 on the NRS or the first face (from left) of the FPS-R. A PMI Pain Score of 1 corresponded to a score of 1 to 4 on the NRS or the second or third face of the FPS-R. A PMI Pain Score of 2 corresponded to a score of 5 or 6 on the NRS or the fourth face on the FPS-R. A PMI Pain Score of 3 corresponded to a score of 7 to 10 on the NRS or the fifth or sixth face on the FPS-R. The PMI Analgesic Score was determined based on the strongest pain medicine the patient had received within the last six hours. Negative scores indicate undertreatment of pain.

NRS, Numerical Rating Scale; FPS-R, Faces Pain Scale-Revised.

Table 2. Demographics, Pain Ratings, and Pain Management Index Scores

Demographic variable	*Number*	*(%)*	*Mean NRS*	*Median NRS*	p-*value*	*Mean FPS-R*	*Median FPS-R*	p-*value*	*% Negative NRS PMI*	p-*value*	*% Negative FPS-R PMI*	p-*value*
Age (in years)												
Mean	29.7											
Range	5–88											
Gender												
Male	213	(53)	3.56	3	0.822	3.70	2	0.608	69%	0.300	67%	0.244
Female	187	(47)	3.63	3		3.67	2		64%		62%	
Patient type												
Adult medical	165	(41)	4.65	4	<0.001	4.64	4	<0.001	79%	<0.001	77%	<0.001
Adult surgical	105	(26)	3.31	3		3.35	2		69%		70%	
Pediatric	130	(33)	2.47	1		2.74	2		48%		46%	
Oncology status												
Cancer diagnosed or suspected	102	(25.5)	4.82	5	<0.001	4.65	4	0.001	71%	0.283	68%	0.516
No cancer diagnosis	308	(74.5)	3.17	2		3.36	2		65%		64%	
HIV status												
HIV-positive	48	(12)	4.46	3	0.049	4.50	4	0.074	81%	0.020	79%	0.030
HIV-negative	351	(88)	3.48	3		3.58	2		64%		63%	
Pain medicine prescribed?												
Yes	262	(65)	4.2	3	<0.001	4.26	4	<0.001	-		-	
No	138	(35)	2.44	1		2.60	2		-		-	
Strongest pain medicine prescribed												
None	138	(35)	2.43	1	<0.001	2.59	2	<0.001	-		-	
Nonopioid	156	(39)	3.64	3		3.72	2		-		-	
Weak opioid	54	(14)	4.89	4		4.89	4		-		-	
Strong opioid	52	(13)	5.15	5		5.23	5		-		-	
Pain medicine given in past six hours?												
Yes	108	(27)	4.29	4	0.006	4.41	4	0.005	33%	<0.001	31%	<0.001
No	292	(73)	3.33	3		3.42	2		78%		78%	
All pain medicine given as prescribed?												
Yes	92	(35)	3.85	3	0.201	3.93	4	0.221	46%	<0.001	46%	<0.001
No	170	(65)	4.39	3		4.44	4		74%		73%	

Described in the table are the demographics of study participants, including age, gender, patient category, cancer status, and HIV status. Mean and median FPS-R and NRS ratings are shown for each subgroup, as well as *p*-values. Pain Management Index (PMI) scores calculated using the NRS and FPS-R ratings are shown for each patient subgroup. Descriptions are shown of whether pain medicine was prescribed, the strength of the strongest pain medicine prescribed, whether the patient received pain medicine in the past six hours, and whether analgesics were administered as prescribed.

FPS-R, Faces Pain Scale–Revised; NRS, Numerical Rating Scale; PMI, Pain Management Index.

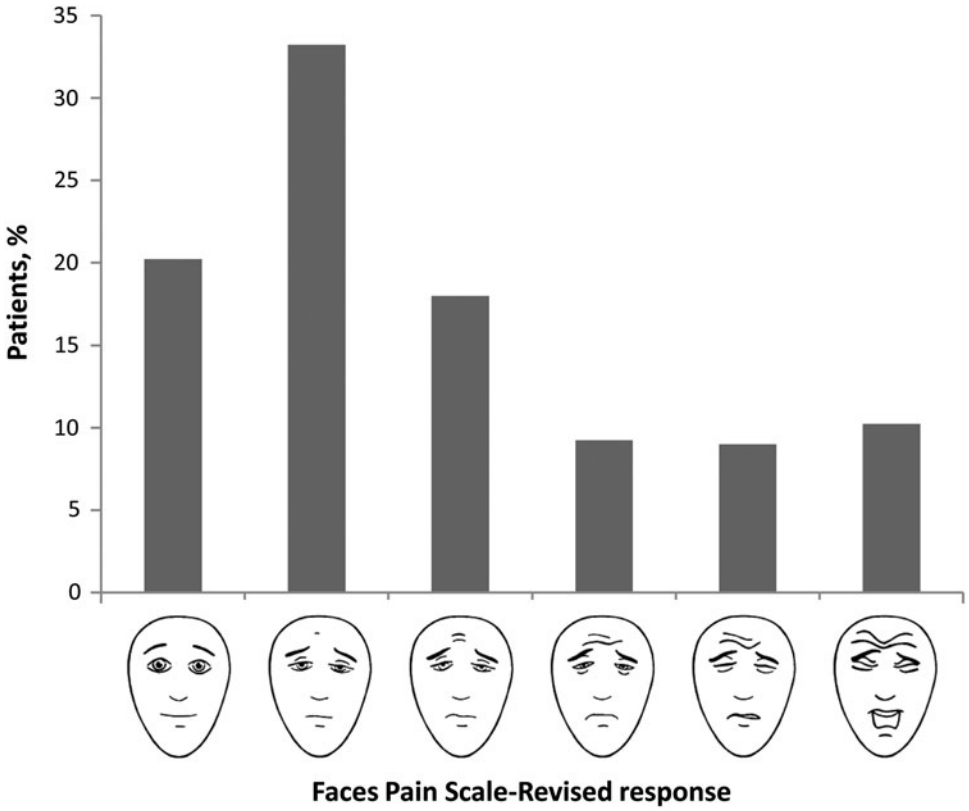

FIG. 1. Faces Pain Scale-Revised (FPS-R) responses. The percentage of patients choosing each response on the Faces Pain Scale-Revised is shown above.[28] (This figure has been reproduced with permission of the International Association for the Study of Pain® [IASP®]).

Spearman correlation coefficients were calculated to assess convergent validity between patient scores on the NRS and the FPS-R. A correlation coefficient of between 0.50 and 0.75 was taken to show a moderate relationship and one of between 0.76 and 1.00 was taken to show a very good or excellent relationship. For binary patient characteristic variables, the Wilcoxon rank sum test was used to determine differences in NRS and FPS-R ratings based on those patient characteristics. The Kruskal-Wallis test was used for patient characteristics that had more than two variable categories.

Using previously established definitions with minor adjustments for greater accuracy in our population, a PMI score was calculated for each subject in order to assess adequacy of analgesics.[35] The PMI compares the patient's pain rating to prescribed analgesics to determine whether a patient's pain is adequately treated. The PMI is considered a conservative measure of pain because it does not account for analgesic dosing, which may not be sufficient for the patient's pain.[35,36] We made two modifications to the PMI as originally described by Cleeland and colleagues. First, we did not use the "worst pain" rating on the Brief Pain Inventory (BPI) but rather each patient's current pain rating on the NRS or FPS-R to determine the patient's pain score. Second, rather than using the strongest pain medicine prescribed to calculate the Analgesic Score, we used the strongest analgesic *received* in the past six hours, since many prescribed analgesics are never actually given to the patient in this setting. Table 1 describes how the PMI was scored. A negative PMI score indicated inadequate analgesic potency.

The χ^2 test was used to determine if there were significant differences in PMI, pain medicine prescribing, or analgesia administration based on patient characteristics. For all tests, p-values < 0.05 were considered significant.

Results

We evaluated 400 hospitalized patients, ranging in age from 5 to 88 years old (see Table 2). Of the participants, 47% were female, 11% were HIV-positive, and 20% had a cancer diagnosis. The two different pain scales utilized in this study, the NRS and FPS-R, showed good concordance in assessing point prevalence of pain. According to the NRS, 49% of patients had mild pain and 32% of patients had moderate to severe pain. On the FPS-R, 51% of patients had mild pain and 28% of patients had moderate to severe pain. The average pain rating on the NRS was 3.59 (standard deviation 3.29), while the average pain rating on the FPS-R was 3.69 (standard deviation 3.16) (see Figures 1 and 2). The convergent validity between these two scales in our sample was 0.94.

The correlates of pain identified in this study included increasing age, positive HIV status, and diagnosed or suspected cancer. There was an association between the strength of pain medicine prescribed and patients' pain ratings ($p < 0.001$). There was no association between a patient's pain rating on the FPS-R or NRS and gender, surgery in the past 48 hours, or whether pain medicines were administered as prescribed.

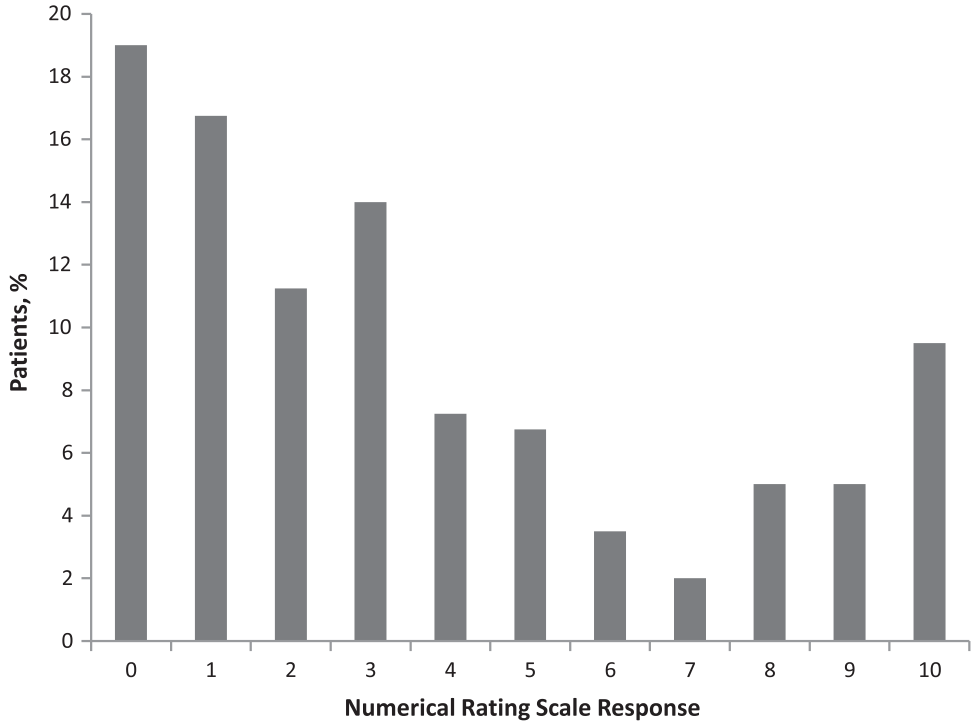

FIG. 2. Numerical Rating Scale (NRS) responses. The percentage of patients choosing each response on the NRS is shown above.

Pain medicine had been prescribed to 66% of participants at some point during their hospitalization. Of all participants, 54.5% had been prescribed nonopioids, 17% had been prescribed weak opioids, and 14% had been prescribed strong opioids (see Table 3). Only 35% of subjects had received their pain medicines as prescribed in the last 72 hours, while 27% of all participants had received pain medicine within 6 hours prior to being surveyed.

Table 3. Pain Medicines Prescribed

Analgesic prescribed	*Number*	*(%)*[a]
Nonopioids		
Aspirin	5	(1.0)
Diclofenac	58	(14.5)
Ibuprofen	21	(5.0)
Paracetamol[b]	122	(30.5)
Buscopan	12	(3.0)
Total	*218*	*(54.5)*
Weak opioids		
Dihydrocodeine	7	(2.0)
Tramadol	62	(15.5)
Total	*69*	*(17.0)*
Strong opioids		
Pethidine[c]	24	(6.0)
Morphine	32	(8.0)
Total	*56*	*(14.0)*

This table shows the types of analgesics prescribed to hospitalized patients in our study and the number of patients who had been prescribed each analgesic.

[a]Percent of total sample ($n = 400$); many patients were prescribed more than one pain medicine.

[b]Acetaminophen.

[c]Meperidine.

Surgical patients were much more likely to have been prescribed analgesics and also to have been prescribed stronger pain medicines than adult medical or pediatric patients ($p < 0.001$) (see Table 4). Adult patients as a group were more likely than pediatric patients to be prescribed pain medicines (approaching significance at $p = 0.050$) and to be prescribed stronger pain medicines ($p = 0.001$).

The average PMI score calculated from each subject's NRS rating was -1.0. The average PMI score calculated from each subject's FPS-R rating was -0.9. A majority of patients (65% on the FPS-R PMI and 66% on the NRS PMI) had undertreated pain as indicated by a negative score on the PMI. HIV-positive patients and adult patients were more likely to have undertreated pain than HIV-negative patients and pediatric patients, respectively. Patients whose pain medicines were not all given as prescribed were more likely to have undertreated pain than those whose pain medicines were given as prescribed ($p < 0.001$). There was no association between undertreatment of pain and gender, cancer status, chronic medical problems, or surgery in the past 48 hours.

Discussion

This study is the first to describe the prevalence, intensity, and treatment of pain in a general hospitalized patient population in East Africa. We have demonstrated that hospitalized patients in western Kenya experience a significant amount of pain, with 80.5% of patients endorsing a nonzero level of pain and 30.0% of patients reporting moderate to

Table 4. Analgesic Data

Demographic variable	*Pain medicines prescribed (%)*	*p-value*	*Pain medicines given in past 6 hours (%)*	*p-value*	*Strongest analgesic prescribed (mean Analgesic Score)*	*p-value*	*All given as prescribed (%)*	*p-value*
Gender								
Male	62	0.083	26	0.571	1.03	0.458	41	0.038
Female	70		28		1.07		29	
Patient type								
Adult medical	60	< 0.001	27	0.191	0.98	< 0.001	32	0.464
Adult surgical	83		21		1.44		33	
Pediatric	59		32		0.83		41	
HIV status								
HIV-positive	58	0.260	21	0.318	0.92	0.364	43	0.348
HIV-negative	67		28		1.07		34	
Oncology status								
Cancer diagnosed or suspected	61	0.295	25	0.512	1.17	0.499	18	0.001
No cancer diagnosis	67		28		1.01		41	

severe pain (averaged across the NRS and FPS-R ratings). There was a strong correlation between the NRS and the FPS-R, further validating the use of these single-item pain scales in this Kiswahili-speaking population.

The point prevalence of pain described in our study (80.5%) is within the range of that found in other studies in SSA.[9–17, 37] It is clear from prior data that pain is a considerable burden on HIV-positive, cancer, and end-stage patients. This study now establishes that hospitalized patients also carry a significant amount of pain. These results help move the conversation forward in SSA regarding pain management as a priority that should be addressed not only in limited populations, but rather as a clinical skill with which all health practitioners should be facile.

Similarly, the correlates of pain described here are in concordance with those found in other studies, including increasing age and medical comorbidities (in our case, HIV and cancer).[18,19] Unlike Harding and colleagues, we did not find that female gender was correlated with symptom burden.[20] This difference may rest in the fact that we investigated correlates of pain only, while Harding and colleagues investigated correlates of physical burden as a whole, including but not limited to pain. Another possibility may be that Harding and colleagues studied HIV patients attending palliative care services, while the current research examined hospitalized patients regardless of disease process.

Patients who were in greater pain were more likely to be prescribed pain medication, to be prescribed analgesics of stronger potency, and to have received pain medication within the previous six hours, indicating an appropriate correlation between pain intensity and treatment even when management of pain was not achieved.

One of the most striking results of our study was that over half of patients had undertreated pain as indicated by negative PMI scores. While analgesics—mostly nonopioids—are prescribed to most patients, patients in this setting often do not receive their pain medicines as prescribed. We believe that potential reasons for undertreatment in our setting include frequent and prolonged stock-outs of pain medications (ranging from paracetamol to morphine); pain medicines not being given as prescribed (due to staff shortages, system failures making it easy to overlook giving medications at the correct time, and other factors); and underprescribing by clinicians.[7,8] Addressing these barriers will require solutions to be explored at several levels. At the state level it may help to develop fail-safe supply chains to ensure government hospitals always have essential medicines at affordable prices and to clarify laws surrounding the proper use of opioids.[2,41] At the training level, clinicians must be educated in the appropriate use of analgesics and gain greater comfort in employing these drugs.[7,8] At the health care delivery level, patients should be allowed the opportunity to communicate their pain through routine pain assessment, and medication dispensing systems should be improved.[42]

Our study had several limitations. First, we measured pain at only one point in time. A patient's experience of pain is not a static phenomenon, and thus more comprehensive tools such as the Brief Pain Inventory (BPI) and the African Palliative Care Association (APCA) African Palliative Outcome Scale are useful in generating a more complete symptom history.[43] However, the single-item pain scales employed in our study are extremely quick to administer, since they only ask one question and thus are more likely to be implemented in our clinical setting. In addition, cross-sectional data on the point prevalence of pain in this population of inpatients is an important starting point. Previous studies have demonstrated that single-item pain scales like the NRS are easily implemented, well-accepted by patients, and useful to clinicians.[44] Secondly, we made two modifications to the PMI. We did not use the "worst pain" rating on the BPI but rather each patient's current pain rating on the NRS or FPS-R. If anything, this gives a more conservative PMI score and underestimates the proportion of patients whose pain is not adequately treated. Also, rather than using the strongest pain medicine prescribed to calculate the PMI, we used the strongest pain medicine given within the past six hours. In our setting, so many of the prescribed medicines were not given as prescribed (due to stock-outs or other reasons) that calculating

the PMI from prescribed rather than administered analgesics would have greatly overestimated the amount of pain treatment each patient received. Lastly, we intentionally sampled a heterogeneous patient population, in contrast with prior studies that largely focused on cancer or HIV/AIDS patients. We believe that broadening the evidence base on pain assessment and management in SSA to a wider population will benefit more patients as our results are applied in clinical practice.

Our findings demonstrate that hospitalized patients in western Kenya experience considerable amounts of pain, much of it undertreated. It is our hope that these results stimulate increasing awareness regarding patients' pain and encourage substantive clinician training in pain assessment and management. The FPS-R and the NRS were easily understood and well accepted by participants and should be implemented for daily use in the inpatient setting in order to gauge patients' pain and response to pain treatment. SSA already carries a great burden of disease; it does not also need to carry a disproportionate burden of treatable pain.

Acknowledgments

We would like to acknowledge Phyllis Bartilol, Daisy Rotich, Ruth Sego, Gilbert Olbara, Anna Mbweka, and Peter Kamau for their invaluable assistance with conducting the surveys.

Author Disclosure Statement

No competing financial interests exist.

References

1. World Health Organization: *Cancer Pain Relief, 2nd ed*. Geneva:WHO, 1996.
2. Powell RA, Kaye RM, Ddungu H, et al.: Advancing drug availability: Experiences from Africa. J Pain Symptom Manage 2010;40:9–12.
3. International Narcotics Control Board: *Narcotic Drugs: Estimated World Requirements for 2010. Statistics for 2008.* New York: United Nations, 2009.
4. Harding R, Powell RA, Downing J, et al.: Generating an African palliative care evidence base: The context, need, challenges, and strategies. J Pain Symptom Manage 2008;36: 304–309.
5. Bosnjak S, Maurer MA, Ryan KM, et al.: Improving the availability and accessibility of opioids for the treatment of pain: The International Pain Policy Fellowship. Support Care Cancer 2011;19:1239–1247.
6. Cartledge P, Harding R, Sebuyira LM, et al.: Prevalence, severity, duration, and measurement of pain in sub-Saharan Africa. Pall Med 2004;18:737–738.
7. Harding R, Powell RA, Kiyange F, et al.: Provision of pain- and symptom-relieving drugs for HIV/AIDS in sub-Saharan Africa. J Pain Symptom Manage 2010;40:405–415.
8. Kamuhabwa A, Ezekiel D: Rational use and effectiveness of morphine in the palliative care of cancer patients at the Ocean Road Cancer Institute in Dar es salaam, Tanzania. Tanz J Health Res 2009;11:170–174.
9. Beck SL, Falkson G: Prevalence and management of cancer pain in South Africa. Pain 2001;94:75–84.
10. Harding R, Selman L, Agupio G, et al.: The prevalence and burden of symptoms among cancer patients attending palliative care in two African countries. Eur J Cancer 2011;47: 51–56.
11. Caraceni A, Cherny N, Fainsinger R, et al.: Pain measurement tools and methods in clinical research in palliative care: Recommendations of an expert working group of the European association of palliative care. J Pain Symptom Manage 2002;23:239–255.
12. Grant E, Murray SA, Grant A, et al.: A good death in rural Kenya? Listening to Meru patients and their families talk about care needs at the end of life. J Palliat Care 2003;19:159–167.
13. Murray SA, Grant E, Grant A, et al.: Dying from cancer in developed and developing countries: Lessons from two qualitative interview studies of patients and their carers. BMJ 2003;326:368–372.
14. Bhengu BR, Ncama BP, McInerney PA, et al.: Symptoms experienced by HIV-infected individuals on antiretroviral therapy in KwaZulu-Natal, South Africa. Appl Nurs Res 2011;24:1–9.
15. Fox MP, McCoy K, Larson BA, et al.: Improvements in physical wellbeing over the first two years on antiretroviral therapy in western Kenya. AIDS Care 2010;22:137–145.
16. Norval DA: Symptoms and sites of pain experienced by AIDS patients. S Afr Med J 2004;94:450–454.
17. Wakeham K, Harding R, Bamukama-Namakoola D, et al.: Symptom burden in HIV-infected adults at time of HIV diagnosis in rural Uganda. J Palliat Med 2010;13:375–380.
18. Namisango E, Harding R, Atuhaire L, et al.: Pain among ambulatory HIV/AIDS patients: Multicenter study of prevalence, intensity, associated factors, and effect. J Pain 2012; 13:704–713.
19. Mphahlele NR, Mitchell D, Kamerman PR: Pain in ambulatory HIV-positive South Africans. Eur J Pain 2012;16:447–458.
20. Harding R, Selman L, Agupio G, et al.: Prevalence, burden, and correlates of physical and psychological symptoms among HIV palliative care patients in sub-Saharan Africa: An international multicenter study. J Pain Symptom Manage 2012;44:1–9.
21. Human Rights Watch: *Needless Pain: Government Failure to Provide Palliative Care for Children in Kenya.* New York: Human Rights Watch, 2010.
22. Thiadens T, Vervat E, Albertyn R, et al.: Evaluation of pain incidence and pain management in a South African paediatric trauma unit. S Afr Med J 2011;101:533–536b.
23. Huang KTL, Owino C, Vreeman RC, et al.: Assessment of the face validity of two pain scales in Kenya: A validation study using cognitive interviewing. BMC Palliative Care 2012;11:5–13.
24. Kenya Hospices and Palliative Care Association: *Patient Information*. Nairobi, Kenya: 2010. kehpca.org/wp-content/uploads/patient_brochure.pdf. (Last accessed April 4, 2013.)
25. Downie WW, Leatham PA, Rhind VM, et al.: Studies with pain rating scales. Ann Rheum Dis 1978;37:378–381.
26. Ferreira-Valente MA, Pais-Ribeiro JL, et al.: Validity of four pain intensity rating scales. Pain 2011;152:2399–2404.
27. Hjermstad MJ, Fayers PM, Haugen DF, et al.: Studies comparing Numerical Rating Scales, Verbal Rating Scales, and Visual Analogue Scales for assessment of pain intensity in adults: A systematic literature review. J Pain Symptom Manage 2011;41:1073–1093.
28. Williamson A, Hoggart B: Pain: A review of three commonly used pain rating scales. J Clin Nurs 2005;14:798–804.
29. Benaim C, Froger J, Cazottes C, et al.: Use of the faces pain scale by left and right hemispheric stroke patients. Pain 2007;128:52–58.
30. Bieri D, Reeve RA, Champion GD, et al.: The faces pain scale for the self-assessment of the severity of pain experienced by

children: The development, initial validation, and preliminary investigation for ratio scale properties. Pain 1990;41: 139–150.
31. Herr KA, Mobily PR, Kohout FJ, et al.: Evaluation of the faces pain scale for use with the elderly. Clin J Pain 1998;14:29–38.
32. Hicks CL, von Baeyer CL, Spafford PA, et al.: The faces pain scale – revised: Toward a common metric in pediatric pain measurement. Pain 2001;93:173–183.
33. Stinson JN, Kavanagh T, Yamada J, et al.: Systematic review of psychometric properties, interpretability, and feasibility of self-report pain intensity measures for use in clinical trials in children and adolescents. Pain 2006;125:143–157.
34. Tomlinson D, von Baeyer CL, Stinson JN, et al.: A systematic review of faces scales for the self-report of pain intensity in children. Pediatrics 2010;126:1168e–1198e.
35. Cleeland CS, Gonin R, Hatfield AK, et al.: Pain and its treatment in outpatients with metastatic cancer. N Engl J Med 1994;330:592–596.
36. Mitera G, Zeiadin N, Kirou-Mauro A, et al.: Retrospective assessment of cancer pain management in an outpatient palliative radiotherapy clinic using the pain management index. J Pain Symptom Manage 2010;39:259–267.
37. Farrant L, Gwyther L, Dinat N, Mmoledi K, Hatta N, Harding R: The prevalence and burden of pain and other symptoms among South Africans attending HAART clinics. S Afr Med J 2012;102:499–500.
38. O'Neill WM, Sherrard JS: Pain in human immunodeficiency virus disease: A review. Pain 1993;54:3–14.
39. Chang VT, Hwang SS, Feuerman M, et al.: Symptom and quality of life survey of medical oncology patients at a Veterans Affairs medical center. Cancer 2000;88:1175–1183.
40. Portenoy RK, Thaler HT, Kornblith AB, et al.: Symptom prevalence, characteristics and distress in a cancer population. Qual Life Res 1994;3:183–189.
41. Logie DE, Harding R: An evaluation of a morphine public health programme for cancer and AIDS pain relief in Sub-Saharan Africa. BMC Public Health 2005;5:82–88.
42. Von Roenn JH, Cleeland CS, Gonin R, et al.: Physician attitudes and practice in cancer pain management: A survey from the Eastern Cooperative Oncology Group. Ann Intern Med 1993;119:121–126.
43. Powell RA, Downing J, Harding R, Mwangi-Powell F, Connor S: Development of the APCA African Palliative Outcome Scale. J Pain Symptom Manage 2007;33:229–232.
44. Williams AC, Rajput-Ray M, Lassalle X, Lacoux P: Assessing pain and mood in a poorly resourced country in a post-conflict setting. J Pain Symptom Manage 2011;42:301–307.

Address correspondence to:
Kristin T. L. Huang, MD
Department of Medicine
Brigham and Women's Hospital
Harvard Medical School
75 Francis Street
Boston, MA 02115

E-mail: kthuang@partners.org