Adequacy of pain management in HIV-positive patients

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Abstract

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Background: A growing body of literature supports the view that people infected with HIV suffer significant pain and that pain is not well recognised or managed by health care professionals. This study investigated the prevalence, severity, recognition and management of pain in adult patients with HIV infection in a South African hospital setting.

Methods: The Brief Pain Inventory (BPI) (short form) questionnaire was administered to 100 consecutive, consenting HIV-positive patients admitted to an urban district-level hospital in KwaZulu-Natal. Convenience sampling was employed with participants recruited on consecutive days. Data sources comprised patient interviews and review of hospital records. A Pain Management Index derived from the BPI was calculated to establish the adequacy of pain management. Descriptive statistics were tabulated for the recognition of pain, pain severity and appropriateness of analgesia. Correlation analyses were used to assess the association between pain and daily life.

Results: Ninety-one per cent of participants reported pain with 83% experiencing significant pain, in other words a "worst pain" rating of five or above on the BPI (short form) questionnaire. The correlation analysis between the severity of pain and its interference with daily life suggests that moderate and severe pain interferes with the patients' daily functioning. Pain was documented on 71% of the patients' medical charts that were reviewed; however, only 34% were considered to be adequately managed for their pain.

Conclusion: Pain prevalence is high in the sample. While pain was recognised and noted in the majority of patients' medical records, the management of pain was considered to be inadequate in a third of those experiencing pain.

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Introduction

Pain in HIV-infected individuals has been recognised as a highly prevalent and clinically important global problem.[1] International studies dating back to 1996 have consistently shown that the estimates of pain prevalence in patients with HIV infection range from 50% to 90%.[2–6] This wide variation may reflect differing study methodologies, differing populations and differing associated factors (e.g. stage of disease, comorbid disease and use of antiretroviral treatment [ART]). For example, a study conducted in New York in 1996 reported that 97% of patients who were considered to have end-stage disease had severe pain and that half to two-thirds of hospitalised HIV-infected patients suffered pain.[6] A similar study conducted in Italy in 2001 recorded a 60% pain prevalence rate amongst hospitalised HIV-infected patients.[7]

Other Western-based studies have shown that pain is widely prevalent regardless of the setting in which patients are being managed.[8,9] Von Gunten estimated that at least one-fifth of the patients who die in hospitals each year experienced pain during the final admission, while a survey of hospice patients in nursing homes conducted by Buchanan et al found that about 50% had daily pain, which was severe in about 85% of patients.[8,9] This holds true in the South African setting as well. For example, a study conducted in a hospice in Soweto showed that pain was the most common symptom experienced by HIV-infected patients.[2] The pain prevalence rate in that study was 98%, with 35% of patients citing pain as the worst overall symptom.

Two South African studies have recorded a pain prevalence of approximately 70% (71% and 69% respectively) in outpatients with HIV disease.[10,11] Norval stated in his article published in 2004 that "at present HIV/AIDS-related literature in South Africa focuses largely on the potential use of antiretroviral drugs, prevention of mother-to-child transmission, governmental policies and attitudes, epidemiology, vaccine trials and factors in this region causing such rapid spread of the virus. Textbooks and literature also focus on AIDS-related syndromes and tumours."[2]

Pain in the HIV-infected individual has diverse presentations and is associated with significant psychological and functional morbidity. These patients present with unique and challenging symptoms in addition to various pain syndromes.[2,12] The most frequently reported pain syndromes were chest pain, headache, abdominal pain, oesophageal and oral cavity pain, anorectal pain, pain related to peripheral neuropathies and musculoskeletal pain. Some patients suffered from more than one type of pain related to the HIV infection.[13]

Pain has also been recognised as the most common reason for a patient with HIV infection to be admitted to hospital; a large number of these patients suffer from one or more pain syndrome and/or more than one type of pain related to HIV infection.[2]

Pain in HIV infection has been consistently shown over the years to decrease the individual's quality of life. The problem of pain interfering with daily living was noted in a review in 1996 when half of the participants complained of pain and over half (60%) experienced a high level of interference with their enjoyment of life.[14] A similar finding was found in a multi-centre study conducted in France in 1997, where it was recorded that pain severity significantly decreased patients' quality of life.[15] A study conducted in South Africa in 2009 has shown that pain is one of the specific impairments that affect physical, psychological and social functioning in the HIV-infected individual's life.[10] These studies have also demonstrated that pain in these patients was not adequately treated. Further, it was noted that the more severe the pain, the more often doctors underestimated it. Other studies have shown that pain hastens death by increasing physiological stress, diminishing immune competence and decreasing the patient's mobility.[16]

Given that pain in HIV infection is a common symptom, one would expect that pain management strategies would be optimum in all health care facilities, with every patient obtaining relief customised to his or her specific needs. However, very little emphasis is placed on the palliation of HIV/AIDS-related symptoms.[1] Pain is often overlooked in favour of the more severe presenting complaints in the HIV-infected patient, for example the management of opportunistic infections.[1] Pain management in patients with HIV infection presents certain unique aspects that must become a priority, along with treatment of the underlying HIV infection and the complications of immune system compromise.

This study was conducted in order to determine the prevalence, severity, recognition and adequacy of pharmacological management of pain in hospitalised patients with HIV infection in a South African setting, and to make appropriate recommendations to key role players to develop an intervention that would optimise pain control in the HIV-infected patient.

Study methodology

The study was conducted in a 142-bed, state-subsidised district hospital in an urban setting; the services provided and the demography of patients and illnesses seen are similar to those in other district hospitals in KwaZulu-Natal. The hospital has a high turnover of admissions, the majority of which are HIV positive and in different clinical stages of illness.

This descriptive analytical study was performed to assess whether patients had pain, how severe the pain was, whether health care providers asked about pain and whether pharmacological management of pain was adequate.

The study did not explore the associated factors affecting pain or the types of pain. This is recognised as a limitation and further studies should review the associated factors affecting pain (e.g. ART, concurrent infections and type of pain – whether somatic, neuropathic or mixed).

Ethics approval was obtained from the Biomedical Research Ethics Committee of the Nelson R Mandela School of Medicine and the Research Ethics Committee of the hospital in which the study was conducted.

Subjects and sampling

The study population included all HIV-infected patients who were admitted to the medical wards during the period of the study. The reason for admission was not taken into consideration. This was a convenience sample, in other words a sample size chosen according to the denominator population, time constraints and logistics. Since this was a descriptive study and no statistical testing was being done in this study, the sample size considered only the total number of medical admissions with an HIV-related diagnosis in a three-month period. The total sample size was conveniently determined to be 100 (n = 100). On designated days, the researcher interviewed consecutive, consenting inpatients (numbering two to four per day) who fulfilled *all* the inclusion requirements for the study

Data collection tools

Two data collection tools were employed, namely the Brief Pain Inventory (BPI) (short form) questionnaire and a data sheet for collection of data from clinical charts.

BPI (short form) questionnaire

There are many validated tools to measure pain and this study employed the BPI (short form). The modified BPI (short form) has been validated in studies among cancer patients and in patients with non-cancer pain.[17–20] This tool was selected as it is the shortest of the pain evaluation tools; it has been validated in resource-poor settings and it has also been used to assess pain in HIV disease.[21,22]

The BPI consists of a series of questions regarding pain, its severity and its interference with daily life. The tool uses

numerical rating scales (ranging from 0 to 10) to rate current pain and pain over the last week at its worst, lowest and average level. The degree of pain relief obtained from pain treatment is rated using a percentage scale. Pain-related interference with functioning (activities of daily living) is measured in seven domains: general activity, mood, walking, normal work, relations with others, sleep and enjoyment of life.[18]

Medical chart review data sheets

Following the interview, every patient's medical chart was retrieved and assessed for the following:

(i) Demographic details;

(ii) Any documentation of pain in the history;

(iii) Analgesics that were prescribed.

Data analysis

A simple data description was tabulated from the data collected on the data sheet to show the demographic characteristics of the participants being investigated. All patients who answered affirmatively to the question, "Are you experiencing pain of any type today?" were tabulated against those who answered negatively, in order to attain the point prevalence of pain in this group of patients. The severity of pain was classified using the following accepted scores on the BPI: mild pain = a pain score rating of 1–3, moderate pain = a pain score rating of 4–7 and severe pain = a pain score rating of 8–10.

Significant pain was determined using the BPI (short form). Pain rated five or above was defined as significant pain, because such pain has been shown to interfere significantly with activities of daily living.[23]

Adequacy of therapy was assessed using two modalities, namely the type of analgesic medications prescribed for pain and the Pain Management Index (PMI) (a measure derived from the BPI).

The PMI compares the potency of analgesics prescribed with the severity of pain intensity reported by the patient. For this study, the congruence between the adequacy of analgesic prescribed and the level of pain was determined by the researcher. The PMI was constructed according to guidelines from numerous studies.[20,24–26] To construct the index, the patient's rating on the "pain at its worst" item of the BPI and the potency of analgesic prescribed are both assigned scores. Patients reporting pain intensity of eight or more were considered to have "severe" pain and coded a "3". Patients with pain intensity between four and seven were rated as "moderate" and coded a "2". Patients with pain intensity less than four were rated as "mild" and coded "1", and patients without pain were coded "0". Using a similar procedure, the potency of the analgesic received by each patient was classified according to the World Health Organization (WHO) analgesic ladder.[23] Patients prescribed opioids conventionally used in the third step of the analgesic ladder for severe pain were assigned a score of "3". Those prescribed opioids conventionally used in the second step of the analgesic ladder for moderate pain were assigned a score of "2". Those receiving both a "weak" opioid and an adjuvant analgesic were assigned a score of "2". Those receiving only non-opioid analgesics or adjuvant analgesics were assigned a score of "1". If no analgesics were prescribed the patient was assigned a score of "0". The PMI was computed by subtracting the assigned pain intensity score from the assigned score for prescribed analgesic. The index ranges from -3 (a patient with severe pain who is prescribed no analgesic) to +3 (a patient who does not report pain and is prescribed morphine). Scores of zero and above indicated adequate analgesic therapy according to WHO guidelines, whereas scores in the negative range indicated inadequate analgesic therapy, in other words patients with "severe" pain who received no analgesics or only non-opioid or adjuvant analgesics, or patients with "moderate" pain who received no analgesics as receiving inadequate analgesic therapy.

The effect of pain on the different parameters of daily life was determined from the BPI (short form). A rating of 0–2 was scored as "no interference". A rating of 3–7 was scored as "interference". A rating of 8–10 was scored as "completely interferes".

The association between pain and activities of daily living was determined by conducting a Pearson correlation coefficient analysis, where a P-value of < 0.05 was considered significant.

Results

Demographic and clinical profile (Table I)

Table I: Description of sample (n = 100)

		Male	Female
		%	%
Age group	21–30 years	14	20
	31–40 years	12	35
	41–50 years	7	9
	> 50 years	1	2
Employment status	Employed	19	23
	Unemployed	13	37
	Disability grant	2	6
Diagnosis of HIV	< 6 months	14	28
	6–12 months	6	17
	> 12 months	14	21
Stage of disease	2	1	2
	3	11	18
	4	2 2	46
CD4 group	< 200	29	41
	≥ 200	5	15
	Not recorded	9	10
ART	On ART	13	21
	Not on ART	21	45

Pain prevalence, severity, documentation and adequacy of management

Ninety-one per cent of the patients (n = 91/100) reported pain, as shown in Table II. Eighty-seven per cent (n = 80/91) of those who reported pain described their pain as being significant (i.e. "worst pain" pain rating of > 5). The mean pain intensity "at its worst" was 8.2 (range 1–10). The mean pain intensity "on average" was 6.8 (range 1–10).

A further breakdown in terms of pain severity is summarised in Table II.

Pain was documented on 71% of participants' medical charts. The severity or intensity of pain was not recorded in any of the patients' medical records. No analgesic was prescribed for a third (33%, n = 30/91) of the participants who had reported pain. Of the 67% (n = 61/91) of patients who were prescribed analgesics, more than half (65%, n = 40/61) were prescribed a non-opioid analgesic. Of those patients prescribed opioids (34%, n = 21/61), just under two-thirds (61%, n = 13/21) were prescribed weak opioids, conventionally used for "moderate pain", and over two-thirds (38%, n = 8/21) of the patients were prescribed strong opioids, conventionally used for "severe pain".

Of the subset of patients reporting "severe pain" (n = 60/100), only seven (11%, n = 7/60) were prescribed strong opioid analgesics, recommended by the WHO for "severe pain". Twenty-one per cent (n = 13/60) were prescribed weak opioid analgesics, recommended for "moderate pain". Half of the patients (51%, n = 3/60) who reported "severe pain" had received only non-opioid analgesics, and one patient with "severe pain" had received no analgesics. The rest of the patients in this subgroup (13%, n = 8/60) were prescribed adjuvant analgesics as their primary analgesic medication, and none of the patients received adjuvant analgesics in addition to an opioid.

Table II: Pain prevalence, severity, documentation and adequacy of management

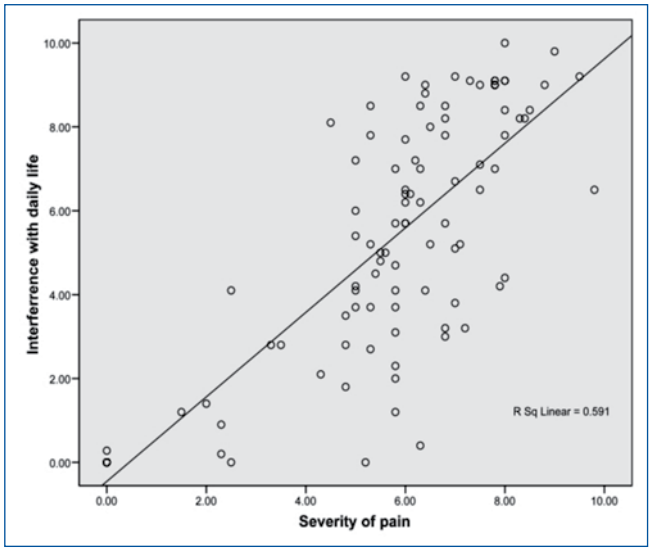
	Number (n = 100)	%
Pain prevalence		
Are you experiencing pain today?		
Yes	91	91
No	9	9
Pain severity		
No pain	9	9
Mild	8	8
Moderate	23	23
Severe	60	60
Significant pain		
Yes	80	87
No	11	12
Documentation of pain		
Yes	71	71
No	29	29
Adequate management		
Yes	34	34
No	66	66

The calculated PMI scores showed that two-thirds (66%) of participants had negative PMI scores, indicating inadequate analgesic therapy. A third (34%) had PMI scores greater than or equal to zero, indicating adequate analgesic therapy.

Correlation between pain and interference with daily life

The Pearson's correlation coefficient analysis was done to measure the linear relationship between pain and its effect on daily living. The scatter block in Figure 1 indicates that the relationship is indeed linear with an R-square linear value of 0.59. The correlation coefficient calculated was 0.769, which indicates that there was a strong positive correlation between the experience of pain and its interference with daily life. The P-value was less than 0.001.

Figure 1: Severity of pain and interference with daily life



Effect of pain on quality of life (Table III)

Table III: Effect of pain on quality of life (n = 91)

	No interference		Interference		Completely interferes	
	n	%	n	%	n	%
General activity	67	7	17	18	7	73
Mood	67	4	20	20	4	67
Walking ability	22	24	60	65	9	9
Normal work	0	0	70	23	21	76
Relations with other people	0	0	13	85	78	14
Sleep	0	0	71	21	21	78
Enjoyment of life	0	0	71	21	21	78

Discussion

This pilot study was conducted with the intention of highlighting the problem of pain amongst patients with HIV disease in a specific hospital setting. The study design

combined descriptive and analytical methodologies that were appropriate to give a comprehensive assessment of the research objectives and hypothesis.

The sample was predominately female and it is unknown whether the prevalence and severity of pain in this context would differ between men and women in another similar context. The higher prevalence of women may be due to the higher number of women being admitted to the medical wards because of associated complications. It is well documented that the HIV/AIDS epidemic in sub-Saharan Africa has a distinctly gendered face; for every 10 adult men living with HIV, there are about 14 adult women who are HIV positive.[27]

The majority of the participants had Stage 4 disease and fell into the lower socioeconomic status category. This category of patients represents the majority of inpatients in the public health sector.[28] Thus the findings of this study are relevant to the public health sector.

It is of concern that only a minority of respondents (34%) were on ART on admission, while at least 67% of patients qualified for ART (67% had Stage 4 HIV disease and 66% had a CD4 count of less than 200). This is distressing given that ART is available free of cost at government clinics in South Africa. The low number of people on ART may reflect problems of access or of testing for HIV when the disease has already progressed. In South Africa, it is estimated that only 16% of people who require ART have access to it.[29]

The reported pain prevalence of 91% is exceedingly high. Of great concern was that, of the 91 patients who reported pain, 83% had significant pain and 60% reported severe pain. These high pain prevalence rates indicate that pain is an ongoing and serious problem for people with HIV disease.

The review of the medical charts revealed that, even though pain was documented for 71% of patients, further assessments of pain were not done and none of the patients' charts indicated the severity of pain.

This study supports the current literature that indicates that pain is significantly undertreated in patients with HIV infection.[30,31] This study also supports the view that severity of pain decreases the HIV-infected patient's quality of life.[12,14,25] The correlation analysis result between the severity of pain and its effect on quality of life showed a strong positive correlation (P-value < 0.001). This linear association implies that the more pain increases in severity, the more it affects quality of life. Although these two variables are positively related to each other, it cannot be concluded that this relationship is causal; in other words, pain does not necessarily cause interference with daily life.

The study did not explore the associated factors affecting pain, the types of pain or the sites of pain. Other studies have noted that patients with AIDS can experience up to 16 differing types and sites of pain.[32]

Factors such as age and stage of illness may also affect pain, and in this study these were not correlated with the prevalence and severity of pain or its effect on daily living.[33] This is recognised as a limitation and further studies should review the associated factors affecting pain (such as ART, type of pain – whether somatic, neuropathic or mixed – and concurrent illness, such as tuberculosis). Anti-tuberculosis drugs and ARVs can cause peripheral neuropathy.[34]

The study considered pain in isolation and considered pain management in terms of pharmacological management only. Pain should be considered in a holistic manner, as pain is subjective and may be influenced by many other factors such as mood, tiredness and anxiety. Similarly, pain management does not involve drug therapy only. There are many other adjunctive modalities available to treat pain successfully (e.g. physiotherapy, acupuncture and psychotherapy).[35]

These findings may not be generalised to all patients infected with HIV. The findings from a hospital-based sample may differ greatly from a population at other sites (e.g. clinic or community). Pain may be more prevalent in a hospital-based sample; however, a local community-based study (where home-based hospice facilities were available) reported a pain prevalence of 89% among participants.[36] These findings are very similar to the findings of this study.

Conclusions

Pain prevalence and severity were high, comparable to other studies of pain in patients with HIV infection. While the limitations in the measure of quality of life are recognised, the data show that significant pain diminishes the quality of life of patients with HIV disease, regardless of treatment setting. This study also shows that HIV-related pain was both poorly recognised and undermedicated, even when pain was most severe. The improvement of the management of pain for HIV-infected patients will require a comprehensive effort. Pain recognition and management must be prioritised.

Validated pain assessment tools need to be incorporated into clinical practice. The pain assessment tools need to be validated in the local context as well as in local languages. All patients who complain of pain should be consistently and thoroughly evaluated with a complete history, physical examination and diagnostic workup. All aspects of pain assessment and care should be clearly documented. Pain management protocols and guidelines need to be developed and implemented.

Barriers to adequate pain management should be explored, including medical personnel attitudes and practices of teaching pain management in undergraduate and

postgraduate curricula. Any system evaluation should also consider whether appropriate drugs are available. The expectations of patients in relation to management of their pain should be explored, particularly linked to the interference of pain with the tasks of daily living.

Since pain is highly prevalent in HIV-infected patients according to this and other studies, it is recommended that future studies be expanded to include other hospitals, clinics and communities, to gain a better understanding of the prevalence, severity, recognition and management of pain.

Recommendations

Pain management should be prioritised in all clinical facilities. Health care professionals should be trained in pain recognition, assessment and management. Ongoing clinical audits of this aspect of palliative care will improve the quality of life of all patients affected by HIV infection.

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