

Original Research Article

Cancer pain assessment and management in ambulatory patients at a tertiary hospital in Ghana

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ABSTRACT

Background: Adequate cancer pain assessment using valid and reliable pain assessment tools is essential for effective cancer pain management. This study evaluated the common types, effectiveness as well as adherence to prescribed analgesics in oncology outpatients in a tertiary oncology centre in Ghana.

Methods: This descriptive cross-sectional study involved 204 oncology outpatients with different confirmed cancer diagnosis attending clinic at the Oncology Directorate of a Tertiary Hospital in Ghana. The research instruments used were the medical folders of patients, a hospital-based electronic drug database system; hospital administration management systems (HAMS) and the Brief Pain Inventory Long-Form (BPI-LF).

Results: More than half (63.7%) of the participants reported moderate pain, 37.8% received opioid analgesics: 31.4% strong opioids and 6.4% weak opioids. Less than one-fourth (21.6%) had complete pain relief and 18.1% felt they needed a stronger pain medication. A little more than one-fourth (28.4%) of participants took their pain medications 1-2 times per day. Almost half (45.6%) of participants did not experience side effects from taking pain medications and 27.9% needed more information about their pain medications.

Conclusions: Enhancing effective cancer symptom management approaches in healthcare practitioners and incorporating existing knowledge and guidelines on cancer pain management into routine clinical practice should be done to enhance efficient pain relief.

Keywords: Cancer pain, Brief Pain Inventory, Cross-sectional study, Analgesics

INTRODUCTION

Pain, a common symptom of cancer which is a persistent and life-altering condition greatly impacts the quality of life of cancer patients worldwide. In spite of the introduction of numerous guidelines and effective pharmacological interventions to manage cancer pain, poor assessment and under-treatment still remain a challenge particularly in sub-Saharan Africa.¹ Standardized assessment and re-assessment of pain

should be conducted routinely in cancer patients to ensure optimum pain management.² Pain is a subjective experience and hence effective pain measurements must rely on patients' self-report.³

Given that accurate assessment of cancer pain can be a complex construct, different multidimensional tools are employed for measurement.⁴ A variety of pain assessment tools for measuring, estimating or describing all aspects of a patient's pain experience are reported in literature.⁵ These pain assessment tools are the numerical

rating, verbal descriptor and visual analogue scales which rate pain on a scale from 'no pain' through to 'excruciating pain' and are known to give reliable results.^{4,6} A prototype of these pain assessment tools is the Brief Pain Inventory (BPI). The BPI assesses pain intensity, pain interference with patient's daily functioning, location of pain and the effectiveness of pain therapy.^{4,5}

Although, originally developed to assess cancer-related pain, the BPI has also been used to assess pain in patients with chronic non-cancerous pain syndromes such as AIDS, low back pain, and osteoarthritis.^{7,8} The BPI has been validated across cultures and in several languages and is sensitive to changes in pain intensity.^{4,6} The BPI has the advantage of being easy to understand and can be self or interviewer administered.^{9,10} Because cancer pain can have detrimental effects on the functional ability of patients; interventions directed at cancer pain management should both relieve suffering from pain and improve function. Some cancer pain alleviation intervention strategies include proper cancer pain assessment, evaluation of the appropriateness of prescribed analgesics, effective educational programs and policy changes.

Although the BPI has been used in several studies to document the pain experience, analgesic adherence and overall pain relief information in cancer patients globally, very little research has examined these parameters in cancer outpatients in Ghana.¹¹ This lapse in information on the effectiveness of cancer pain relief therapy from developing countries can lead to suboptimal cancer pain control as existing pain management approaches are not race or culture sensitive. This study seeks to investigate the types, effectiveness as well as adherence to prescribed analgesics in oncology outpatients in a tertiary oncology centre in Ghana.

METHODS

Study setting and duration

The study was a hospital-based descriptive cross-sectional study conducted from 1st January to 30th December, 2015. This study was conducted at the Oncology Directorate (a comprehensive cancer treatment facility which provides complete therapy for all types of cancer) of the Komfo Anokye Teaching Hospital (KATH) which is located in Kumasi, Ghana (6°41'46.78"N and Longitude 1°37'44.79"W). KATH is the second largest hospital in Ghana after the Korle-Bu Teaching Hospital in Accra, Ghana. Due to the geographical location and the level of commercial activities in Kumasi, KATH serves patients from all the northern regions of Ghana, Brong Ahafo, Central, Western, Eastern, Volta Regions and some countries in sub-Saharan Africa and is considered as one of the best hospitals in the West African sub-region in terms of the provision of cancer care.

Study design/study population

This study was a descriptive cross-sectional study. The study population were outpatients attending clinic at the Oncology Directorate of KATH who had been newly diagnosed with cancer. Most of the patients treated at this facility had solid tumours which required multimodal treatment regimens for primary or metastatic disease.

Sampling procedure

A non-probabilistic sampling procedure was adopted; specifically, a convenient sampling method was used for this study. Convenient sampling method was used because of the infinite nature of the target population and the absence of a well-defined sampling frame for probabilistic sampling. By this method, all patients who were available and willing to participate in the study were included in the study until a sample size of 204 was realized.

Data collection tools

The medical folders of oncology outpatients who reported at the Oncology Directorate, KATH in 2015 with confirmed diagnosis of cancer were reviewed for key demographic characteristics. Clinical information such as the presence of comorbid conditions (including cardiovascular diseases, diabetes mellitus and other diseases listed in the Charlson Comorbidity Index), primary cancer site, stage of cancer (classified according to the National Cancer Institute guidelines: Stage 0=Carcinoma in situ; Stage I, Stage II, and Stage III= higher numbers indicate more advanced disease, greater tumor size, and/or metastasis of cancer cells from the primary tumor site to nearby organs; and Stage IV= metastatic cancer), presence or absence of metastasis, and family history of cancer were also extracted from the patients' medical folders using a self-designed questionnaire constructed using Epi info version 7.¹²⁻¹⁴

Information on the history of anticancer treatment modalities used (e.g. radiation therapy, chemotherapy, surgery and hormone therapy) were obtained from the patients' medical folders and from an electronic clinical management database operated by KATH; Hospital Administration Management Systems (HAMS). Information on prescribed analgesics was obtained from the patients' medical folders, HAMS and the Brief Pain Inventory-Long Form (BPI-LF).

The Brief Pain Inventory

The BPI is a Patient Reported Outcome (PRO) instrument which is built on an 11-point numerical rating scale (NRS) concept. The BPI assesses pain intensity, the impact of pain interference on the patient's daily functioning, other aspects of pain (history and location) and information about pain treatment modalities (both pharmacological and non-pharmacological).

Pain intensity index

The four items on the BPI which makes up pain intensity index are “pain at its worst”, “pain at its least”, “pain on the average”, and “pain now”.

Functional interference index

The seven items on the BPI which makes up functional interference index are general activity, mood, walking ability, normal work, relations with other people, sleep, and enjoyment of life.

Pain location

The BPI has a body diagram which shows a “front” and “back” view with “left and right sides” from which sites of pain can be indicated.

Pharmacological management of pain

The BPI asks information about prescribed pharmacological pain management strategies.

Non-pharmacological pain alleviation methods

The BPI provides options of non-pharmacological pain management approaches such as the use of warm compresses, cold compresses, relaxation techniques, distraction, biofeedback, hypnosis, and “other”. Respondents who chose “other” were given the chance to indicate interventions not prescribed by their doctor that they take for the management of their pain.

Ethical issues

Ethical clearance was sought from the Committee on Human Research, Publications and Ethics (CHRPE), Kwame Nkrumah University of Science and Technology (KNUST), Kumasi-Ghana (CHRPE/RC/012/15). Permission to conduct the study was sought from the Oncology Directorate, KATH before commencement of data collection. Verbal informed consent was sought from patients prior to the conduction of interviews and the interviews were conducted in accordance with the Declaration of Helsinki for human research.¹⁵

Pre-testing of questionnaire

The BPI- LF questionnaire was pretested on a convenient sample of 10 cancer outpatients who met the study’s eligibility criteria to evaluate the feasibility, easy readability and comprehensibility of the questionnaire a month prior to the data collection exercise. The pretesting was done one month prior to the commencement of data collection.

Procedure for interview

A face-to-face interview method was employed in this study because of the assumption that literacy amongst the participants may be low. Also, the psychological disposition of the participants was assumed not to be favourable for self-administration of the questionnaire.

The questionnaire was administered by the principal researcher (who is bilingually competent in both Twi and English languages) in either English or Twi language depending on the educational background or language of preference of the participants. Ghana is a multilingual country with each region speaking a different language. Twi is the local language of the indigenous people of the Ashanti Region of Ghana; which is spoken by about two-thirds of the population and understood by nearly all Ghanaians; especially the Akan ethnic group. The interview was conducted over a period of one year commencing on January – December, 2015.

Inclusion and exclusion criteria

The study included cancer outpatients of either sex who were 18 years or older, had pathologic diagnosis of cancer (primary or metastatic) and could comprehend English or Twi language. Patients who were less than 18 years, had documented or observable psychiatric or neurological disorders (e.g., dementia or psychosis) and could not understand Twi language or read English language were excluded from the study. Patients who did not provide verbal informed consent were also excluded.

Data analysis

To ensure patient confidentiality, patient identification (ID) numbers and not patient names were used during the data analysis process. Internal consistency of the test instrument was computed as the Cronbach’s alpha coefficient as described by Cronbach (1951).¹⁶ The Mann-Whitney, Kruskal-Wallis and independent *t*-tests were done where appropriate. Statistical Package for Social Scientists (SPSS) version 24.0 for windows was used to analyse the data. Demographic and clinical characteristics of participants were described using frequencies, percentages, means, standard deviation, and range statistics. Pain intensity was categorized as a score of 0 = no pain, 1 = mild pain (1–4), 2 = moderate pain (5–6) and 3 = severe pain (7–10).^{15,17}

RESULTS

Participant Characteristics

The available data was obtained from 204 patients, whose demographic and clinical characteristics are shown in Table 1. Female participants accounted for 82.9% of the

sample; the mean age of participants was 53.5 years (SD ±15.5). Majority (89%) of participants were Christians, 51.5% were married, 39.2% were unemployed, 81.9% had national health insurance, and 9.1% had a positive family history of cancer. The most frequent cancer sites were breast (37.7%), gynaecological (26.9%) and oropharyngeal (9.1%).

Table 1: Demographic and clinical characteristics of the study population (n = 204).

Characteristic	n	%	
Mean age ± SD	53.5 ± 15.5	204	
Gender	Female	169	82.9
Educational level	Elementary/ JHS	66	32.4
Marital status	Married	105	51.5
Religion	Christianity	178	89.0
Job status	Unemployed	80	39.2
NHIA membership	Yes	167	81.9
Region	Ashanti	112	55.7
Metastasis	Presence	66	32.4
Family history	Positive	17	9.1
Cancer site	Breast	66	37.7
	Gynecological	47	26.9
	Oropharyngeal	16	9.1
Cancer staging	Early (stages 1 and 2)	15	34.9
	Advanced (stages 3 and 4)	28	65.1

Source: Authors construct 2016.

Internal consistency of the BPI

The Cronbach’s α coefficient was computed to be 0.78 for pain intensity index (made up of 4 items) and 0.92 for functional interference index (made up of 7 items). The Cronbach’s α coefficient for a composite score of both pain intensity index and functional interference index was computed to be 0.88 which is acceptable.¹⁶

Pain and analgesic history of participants

Pain severity and pain location in this population

Using a previously validated pain severity classification method by Okuyama et al, 28.4% of patients reported severe pain (7 or greater), 63.7% reported moderate pain (5–6) and 7.8% reported mild pain (1–4) on the BPI.¹⁵ Almost three-fourth (73%) of participants had pain due to their present disease and in 66.7%; pain was a symptom of their diagnosis.

The top 5 commonest sites of pain experienced by participants in this study were the abdomen (20.3%), left

breast (12.4%), head (10.5%), right breast (9.2%) and cervix (7.2%). The least common pain site was the spine (0.7%). Other pain sites showed percentages of less than 5%.

Analgesic history of participants

About a third (32.4%) of the participants required pain medication for the management of their pain. More than half (63.7%) of participants had not taken pain medication in the last 7 days. Almost a quarter (24.5%) of participants had average pain relief, 5.4% had least pain relief, and 0.5% had no pain relief while 21.6% had complete pain relief from taking prescribed analgesics. More than a fourth (28.4%) of participants took pain medications 1-2 times per day. Almost half (45.6%) of participants in this study did not experience side effects from taking pain medications. About a fifth (18.1%) of participants felt they needed a stronger pain medication for their pain. A little more than one-fourth (27.9%) of the participants needed more information about their pain medications. Of the 204 participants in this study, 50.5% were prescribed analgesics. More than one-third (37.8%) received opioid analgesic treatment: 31.4% were taking strong opioids and 6.4% were taking weak opioids (Table 2).

Table 2: Pain and analgesic history of participants.

Pain severity	Prescribed nonopioid	Analgesic weak opioid	Strong opioid	Subtotal
Mild (1-4)	0 (0)	1 (1.9)	0 (0)	1 (1.9)
Moderate (5-6)	6 (11.1)	4 (7.4)	24 (44.4)	34 (63.0)
Severe (7-10)	8 (14.8)	2 (3.7)	9 (16.7)	19 (35.1)
Subtotal	14 (25.9)	7 (13)	33 (61.1)	54 (100.0)

Source: Authors construct 2016.

Table 3: Non- pharmacological pain management approaches by participants.

Method	Responses	
	N	Percent
Warm compresses	12	12.9
Cold compresses	7	7.5
Relaxation techniques	56	60.2
Distraction	10	10.8
Biofeedback	2	2.2
Hypnosis	2	2.2
Other methods	4	4.3
Total	93	100.0

Participants' non-pharmacological pain management approaches

The use of relaxation techniques for the alleviation of cancer-related pain was very popular among participants in this study (Table 3).

DISCUSSION

Literature is almost silent in the area of cancer pain assessment using the BPI in developing countries such as Ghana.¹⁸ But research has shown that the BPI is a very helpful tool in documenting the pain experience, analgesic adherence and overall pain relief information among cancer patients in developed countries.¹¹ This research gap in developing countries can affect the overall effectiveness of analgesic therapy among cancer patients. It is known that accumulating information on the pattern of analgesic prescription for pain management in cancer patients is critical in improving cancer symptom management in both developed and developing countries.^{15,18} This can go a long way to lessen the overall pain burden in cancer patients globally.

One desirable quality of a good PRO instrument used to assess pain in cancer patients is its ability to elicit consistent and reliable responses. Cronbach's α coefficient as stipulated by Cronbach can be used as a proxy predictor of good internal consistency and reliability of a PRO instrument.¹⁶ The BPI showed acceptable internal consistency ($\alpha=0.88$) in this study which has been corroborated by other studies among cancer patients.^{4,5}

It has been documented that even mild pain on the BPI can cause serious consequences on the daily functioning of cancer patients.¹⁵ In this study, majority (63.7%) of the participants reported moderate pain (5–6) on the BPI in accordance with the tenets of Okuyama et al.¹⁵ This reported moderate pain by participants in this study is enough to affect their quality of life. Because there is documented evidence that cancer pain is poorly assessed and managed in developing countries, pragmatic strategies should be put in place to address this shortfall.¹⁸ Perhaps the recommendations of the Joint Commission on Accreditation of Healthcare Organizations, an independent non-profit organization based in the United States of America can be adopted and implemented in Ghana to enhance effective cancer pain assessment and management.¹⁵

It is known that pain caused by factors such as direct cancer growth in human tissues and/ or metastases as well as coexisting non-malignant pain is one of the earliest and commonly reported symptoms of cancer. It is therefore not surprising that in this study, 73% of participants had pain due to their cancer diagnosis and 66.7% reported pain as a symptom of their diagnosis. The fact that the abdomen appears to be the most frequent

pain site in participants in this study has been corroborated in other studies among cancer patients.¹⁰ Other common pain sites reported in cancer patients in other studies include head and neck, knee and low back.^{19,20} The fact that some participants experience pain at multiple sites in this study has been reported in previous studies.^{10,21}

The WHO analgesic algorithm involving a 3-step analgesic ladder is considered the gold standard of cancer pain management.²² Per the tenets of the WHO ladder algorithm, the selection of non-opioid, weak opioid, strong opioid as well as adjuvant analgesic therapy should be individualized and based on the patient's reported pain intensity.²³ Morphine, a strong opioid which should be reserved for the management of severe pain was frequently used in the management of moderate cancer pain per the findings of our study. This is contrary to the WHO analgesic ladder stipulations. Indiscriminate use of analgesics particularly opioids is on the ascendency and can lead to opioid related untoward effects such as tolerance, physical and psychological dependence as well as abuse.²²

It is said that the overall quality of pain control can be influenced by the patients' attitudes, beliefs and misconceptions about pain treatment modalities.¹¹ Thus, it is imperative that patients should be given adequate instructions at the hospital by healthcare practitioners in order to correct possible misconceptions about prescribed pain treatments (e.g., fear of addiction). In-depth and consistent information about cancer-related pain and pain relief strategies should be provided along with clear and concise instructions concerning regular pain medication intake, dosage adjustments, management of drug side effects and the use of non-pharmacological approaches to curb cancer pain. There should be proper dosing of analgesics to achieve optimum pain control. Each dose of analgesics should be given before the effect of the previous dose fully wears off. In that way, it is possible to achieve continuous pain relief, although rescue doses for breakthrough pain may be given on pro re nata (PRN) basis in addition to the regular analgesic regimen.²⁴

Studies have shown that cancer patients in sub-Saharan Africa commonly resort to the use of complementary and alternative medicine (CAM) approaches such as physiotherapy, relaxation techniques and hypnosis, to treat cancer-related pain.²⁵ In this study, the use of relaxation techniques such as yoga, meditation, deep breathing and prayer which are meant to complement the usual pharmacological approaches to cancer pain management was common in the study population.^{26,27} This practice seemed to provide some pain relief to participants. This buttresses a previous observation that consistent practice of relaxation techniques can potentially reduce the symptoms or improve the outcome of pain in cancer patients.²⁶ In light of the growing

interest in CAM, healthcare professionals need to be educated about the common CAM therapies which can reduce pain in cancer patients and help them to cope better with cancer pain.

CONCLUSION

About a half (50.5%) of participants received analgesics for the management of their pain; of which strong opioid analgesics was the most popular. More than a fifth (21.6%) of participants had complete pain relief from taking prescribed analgesics. More than a fourth (28.4%) of participants took their pain medications 1-2 times per day.

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