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Assessment of Under-treatment of Pain among Cancer Patients Admitted to Palliative and Oncology Units using Pain Management Index

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RESERACH

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ABSTRACT

Aim

To assess the prevalence, intensity and adequacy of cancer pain management in adult cancer patients admitted to palliative and oncology units.

Methods

This prospective cross-sectional study included 323 adult cancer patients including all accessible and eligible inpatients who were seen and managed under the oncology department and interviewed in a randomly selected week excluding weekends of each month for 6 consecutive months. The adequacy of pain management assessed using PMI.

Results

This study showed that 66.8% of patients had pain; 71% of them had moderate to severe pain; however, the pain was adequately treated in 90% of patients based on PMI ≥ zero. The satisfaction survey showed that 84.5% of patients were satisfied about pain management and 15.5% were not satisfied. 89% of patients treated by analgesics and 85% of them treated by opioids and there was no correlation between demographic factors and level of adequacy of pain control.

Conclusion

Moderate to severe cancer pain is common and affects patients at different disease stages; however, optimal and effective pain management is affected by many obstacles that could be patient and family related or care provider related. This study showed that 90% of the patients included were adequately treated and 84% of them were satisfied.

Key Words

Pain, Management, Cancer, Palliative care

Background

Aging, smoking, and other environmental factors are increasing the incidence and burden of cancer in Saudi Arabia and elsewhere throughout the globe, resulting in high rates of death and morbidity[1]. Many cancer patients find that dealing with their pain is one of the worst parts of living with the disease. According to multiple studies, approximately one third of cancer patients undergoing active anticancer treatment and two thirds of patients with advanced stage of disease experience pain severe enough to warrant analgesia [2-9].

Guidelines for cancer pain treatment were developed by the World Health Organization (WHO) in 1986 and 1996, respectively, to improve cancer pain control and reduce the prevalence of poor pain management. The World Health Organization (WHO) analgesic ladder recommends starting with nonopioid analgesia like acetaminophen and NSAIDs for mild pain, and moving on to weak opioids like codeine for moderate pain. Step 3 titration involves the use of powerful opioids such morphine, hydromorphone, fentanyl, or oxycodone if the pain is severe or unresponsive to step 2

titration[10]. Published research after the WHO guidelines were established shown their efficacy in enhancing cancer pain treatment in a variety of circumstances[11]. More in-depth recommendations for managing cancer pain, such as the American AHCPR (Agency for Health Care Policy and Research) guideline[12] and the Scottish SIGN 44 guideline [Scottish Intercollegiate recommendations Network: report no. 44] [13], have also been published. Reliable and frequently updated cancer pain treatment recommendations are available from European and North American organizations including the European Society for Medical Oncology (ESMO), the European Association for Palliative Care (EAPC), and the National Comprehensive Cancer Network (NCCN) [14–16].

Inconsistent use of the recommendations, as shown by a number of studies [17–19], results in inadequate and incorrect management of cancer pain. Inadequate or undertreatment of cancer pain is a prevalent problem in many countries throughout the globe [20, 21], despite the availability of appropriate recommendations for cancer pain management. The proportion of undertreated cancer pain ranged from 8% to 82%, with a mean of 43%, according to a systematic analysis published in 2008 that included 26 studies published between 1994 and 2007 and utilized the Pain treatment Index (PMI) to evaluate appropriateness of cancer pain treatment. Undertreatment decreased by almost 25% (from 43.4 to 31.8%), according to another updated systematic review published in 2014 that included 20 additional studies completed between 2007 and 2013 [22]. Patient and family-related hurdles, such as worry about medication adverse effects or danger of addiction, may contribute to insufficient or inadequate cancer pain treatment. Possible causes include inadequate healthcare provider training and education as well as stringent national regulations on prescribing practices. Inadequate resources and health care system-related obstacles, such as inadequate attention to the pain issue and a lack of defined regulations and procedures, also contribute to the problem [23–27]. While Saudi Arabia has comparable challenges as other nations, little is known about the incidence of cancer and the quality of pain management available to those who suffer from the disease.1 Despite widespread access to opiates like morphine at major tertiary and cancer facilities in Saudi Arabia, per capita morphine intake in the country was just 0.80 milligrams in 2013, compared to 6.27 milligrams worldwide [28].

Several assessment approaches are utilized and suggested in the literature, but all of them have certain limitations [29, 30]. Nonetheless, evaluation of cancer pain management is an essential quality indicator in palliative care and cancer patient care. Cleeland, et al. [31] created the Pain Management Index (PMI), a validated measure utilized by several research across a variety of nations and contexts [32–34]. The purpose of this research was to use the PMI (pain management index) to evaluate the quality of pain management provided to patients with cancer who were hospitalized to palliative or oncology hematology units.

Methods

Aim of the study

To assess the adequacy of pain management in cancer patients admitted to the oncology department.

Specific objectives

- To assess cancer pain prevalence and its intensity.
- To assess of the efficacy of cancer pain treatment using PMI.

Secondary objective

- To assess of predictors of inadequate pain management.
- To assess of patient satisfaction with pain management

And correlation with inadequate pain management.

Setting

In-patients were admitted under the oncology department at King Abdulaziz Medical City (KAMC) including PCU (palliative care unit), adult medical oncology, hematology-oncology, stem cell transplant (SCT), and gyne oncology units.

Study subjects

Adult cancer patients were admitted under the oncology department.

Eligibility criteria

Inclusion criteria:

- Adult patients who are 18 years or older.
- Documented confirmed solid or hematological cancer diagnosis.
- Provided informed consent to participate in the study.

The estimated sample size was 385; however, we increased it to 606.

Exclusion criteria:

- The patient who had a major surgery and general anesthesia within the last month.
- If the pain is not related to cancer or its treatment.
- If the patient was cognitively impaired or unable to participate or refused to participate.

• If the patient was previously interviewed.

Study design

Cross - sectional design.

Sample size sampling technique

A total of 323 patients included in this study included all accessible and eligible inpatients who were seen and managed under the oncology department and interviewed in a randomly selected week excluding weekends of each month for 6 consecutive months.

Data collection

Researchers (4 palliative care physicians) used a data collection sheet to collect information about patients, such as demographics (age, gender, marital status, occupation, and level of education), disease information (diagnosis, site of tumor, stage of disease, duration of disease, treatment received), PPS, comorbidities, medication history (analgesics and co-analgesics), pain intensity score using a brief pain inventory, analgesic potency score, and pain management.

Data source

Baseline information, including disease information, drugs prescribed, and comorbidities, was obtained from the patient's electronic medical chart and the rest of the information was obtained directly from the patient through direct interviews.

Instruments used and measurements

• The adequacy of pain management was calculated using PMI.

• PMI = analgesic score - pain score, ranges from 3 to +3

• Pain management considered adequate if PMI score 0

• Pain score calculated based on numerical pain scale (0 – 10) at the time of an interview as follows (the worst pain score will be documented in calculation):

- No pain = 0
- Mild pain (1 – 4) = 1
- Moderate pain (5 – 6) = 2
- Severe pain (7 – 10) = 3

• Analgesic score calculated based on the potency of medication prescribed by the physician to control pain as follows:

- No analgesic = 0
- Non-opioid = 1
- Weak opioid = 2
- Strong opioid = 3

Data management and analysis plan

The research team put the data from the abstract forms they had collected into an Excel spreadsheet. The database was kept safe by adhering to proper backup processes. After any necessary modifications to the data have been made, the database will be encrypted and stored before being made available to the biostatistician. Using descriptive statistics, we characterized all of the data we gathered. We use numbers and percentages to characterize categorical variables. The mean, median, standard deviation, and range are measures of dispersion for continuous variables. Univariate analysis was also used to look at how various factors were connected for the inferential analysis. Proportions of nominal category variables were compared using the chi-square test, while continuous variables were compared using the t-test.

Ethical consideration

Before beginning this investigation, the King Abdullah International Medical Research Center in Riyadh (KAIMRC) evaluated and approved the research protocol and all patients provided informed permission. Patient information will be kept anonymous and anonymised wherever possible, according to the study's authors.

Results

We recruited 323 patients, of whom 176 (54.5%) females, half of them(50.2%) were more than 60 years old, most of the participants were married 282 (87.3%). Three quarters of the sample(n= 247, 76.5%) were unemployed and (n=234, 66.3%) had at least one comorbid disease [Table 1]. Regarding the patients' disease profile and treatment characteristics , half of them had stage IV (n= 165, 51.1%) and most of them were diagnosed after less than one year (n= 168, 52%). Only 13 patents (4%) did not receive any form of cancer-directed treatment, while the rest received at least one type of treatment (not mutually exclusive) [Table 2].

Discussion

Patients and the healthcare system should be very concerned about the prevalence of inappropriate or insufficient treatment of cancer pain. According to the results of this research, 66.8% of patients experience pain, the vast majority of which ranges from moderate to severe. Roughly 10% of patients with a body mass index (BMI) below zero were receiving poor pain treatment. Analgesic use reduced patient discomfort in 89% of cases. Eighty-five

percent of them prescribed opioids, with acetaminophen being the most regularly prescribed non-opioid painkiller and morphine, hydromorphone, tramadol, and fentanyl being the most commonly prescription opioids. Only 5% of patients utilized NSAIDs, whereas 18.6% used steroids and 5.3% used an anticonvulsant as co-analgesics. The most prevalent types of solid tumors were those affecting the digestive tract, gynecology, breast, lungs, genitourinary system, and hepatocellular carcinoma (HCC), with lymphoma being the most common kind of hematological malignancy and leukemia. Forty percent of patients had an undetermined illness stage, while more than half had stage 4 and the vast majority had been diagnosed within a year.

Seventy-five percent were given chemotherapy, thirty percent had surgery, and thirty percent received just palliative care. Another Saudi study with 160 cancer patients found that 57% of patients had pain, but only 43% of them had their pain assessment documented before starting analgesics, and only 6 of 29 patients (20%) with severe pain have received opioids, giving the impression that no oral opioids were available at that hospital[35]. Results from 26 research using the same technique in 2008 indicated a range of 8 percent to 43 percent, with an average of 43 percent insufficient pain management; a further evaluation in 2014 using 20 more studies showed a 25 percent drop in the rate. The prevalence of pain in Japan was 53.8%, and between 39.7% and 51.6% of those experiencing pain had it poorly controlled [36]. Similar to prior research [37], a study of 164 patients using BMI in Portugal indicated that only 4% of patients had poorly managed pain.

Despite differences in the adequacy of pain management across countries, our study found results consistent with those of other national and international studies. This difference is likely attributable to differences in factors such as access to care, adherence to guidelines, cultural perceptions of pain, and the availability of specialist pain management teams. Many factors, both internal and external to the healthcare system and to healthcare professionals, contribute to the under treatment of cancer pain around the world. These include, but are not limited to, a lack of knowledge and training, an inappropriate assessment of pain, and a lack of effective policies, procedures, and guidelines for management.

Some patients with mild pain reported being satisfied, and the satisfaction survey revealed a significant correlation between satisfaction and level of education, with less satisfaction in highly educated patients compared to other patients. This study used a satisfaction survey to supplement PMI, and the results were similar to those for adequate pain management. No statistically significant link between demographics and pain management success was found in this investigation. The majority of patients were either at stage IV or unknown stage, which makes the results of this study less generalizable to other settings. In addition, the use of PMI does not include non-opioid medications to treat neuropathic pain, nor does it mention the dose, route of administration, or frequency.

Conclusion

Patients at all stages of the illness may have moderate to severe pain from cancer, yet this research found that 10% of patients were not given effective treatment for their pain.Although analgesics were used for 89% of patients and opioids were used for 85%, there was no link between patient demographics and adequate pain management. Roughly 85% of patients reported being pleased with their pain evaluation and care, however those with more education reported being less satisfied.

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Tables

Table 1: Patients Characteristics (n=323)

Variable	Level	Counts	Proportion
Age	< 30	25	0.077
	30 - 60	136	0.421
	> 60	162	0.502
Gender	Male	147	0.455
	Female	176	0.545
Marital status	Married	282	0.873
	Not married	41	0.127
Comorbidities	Diabetes Miletus	130	0.402
	Hypertension	137	0.424
	Dyslipidemia	41	0.127
	Heart disease	32	0.099
	Pulmonary disease	19	0.059
	Renal disease	16	0.05
	Neurological disease	18	0.056
	Endocrine	22	0.068
	Other	74	0.229
	Non	109	0.337

Table 2: Cancer and treatment characteristics (total of cases 323)

The stage of disease	Stage I	7	0.022
	Stage II	5	0.015
	Stage III	18	0.056
	Stage IV	165	0.511
	Unknown	128	0.396
The duration of disease	> 3 years	56	0.173
	2 - 3 years	25	0.077
	1 - 2 years	74	0.229

	< 1 year	168	0.52
Treatment received	Surgery	96	0.297
	Chemotherapy	240	0.743
	Immunotherapy	31	0.096
	Hormonal therapy	20	0.062
	Radiation therapy	71	0.21
	Palliative care Non	95	0.294
		13	0.04

Table 3: Analgesic Characteristics (Total= 323)

Variable	Level	Counts	Proportion
Analgesics	Acetaminophen	120	0.372
	NSAIDs	10	0.031
	Codeine	20	0.062
	Tylenol III	11	0.034
	Oxycet	1	0.003
	Oxycodone	2	0.006
	Oxycontin	3	0.009
	Tramadol	31	0.096
	Morphine	145	0.449
	Hydromorphone	46	0.142
	Fentanyl	17	0.053
	Non	18	0.056
	Other	1	0.003
Co-analgesics			
	Steroids	60	0.186
	Anticonvulsants	17	0.053
	TCA	1	0.003
	Lidocaine	3	0.009
	Non	244	0.755
	Other	2	0.006

Table 4: Pain Characteristics (Total= 323)

Variable	Level	Counts	Proportion
Pain score	No pain = 0	154	0.476
	Mild pain = 1	48	0.19
	Moderate pain = 2	51	0.202
	Severe pain = 3	70	0.277
		154	
Pain prevalence	No pain		0.476
	Pain	169	0.668
The pain management index (BMI)	Minus (-3)	3	0.012
	Minus (-2)	4	0.016
	Minus (-1)	18	0.071
	Zero(0)	83	0.328
	Positive (+1)	66	0.261
	Positive (+2)	35	0.138
	Positive (+3)	44	0.174
The pain management index (BMI)	less than zero	25	0.099
	Equal or more than Zero	228	0.901
analgesic score	No analgesics = 0	22	0.087
	Non-opioid = 1	38	0.15
	Weak opioid = 2	26	0.103
	Strong opioid = 3	167	0.66

Table 5: Patient Satisfaction (Total 323)

Variable	**Level**	**Counts**	**Proportion**
Patient is	Very dissatisfied	6	0.019
	Dissatisfied	27	0.084
	Slightly dissatisfied	7	0.053
	Slightly satisfied	39	0.121
	Satisfied	64	0.508
	Very satisfied	70	0.217
Group satisfaction	Dissatisfied	50	0.155
	Satisfied	273	0.845
Group Satisfaction			
PAIN SCORE	Satisfied	Dissatisfied	Total
Pain	121 (71.6%)	48 (28.4%)	169 (100%)
No Pain	82 (97.6%)	2 (2.4%)	84 (100%)
Total	203 (80.2%)	50 (19.8%)	253 (100%)

Table 6: Palliative Performance Scale.

Mean	50%
Median	50%
Std. Deviation	20%
Minimum	10%
Maximum	100%

Table 7: Association between educational level and satisfaction.

Group Satisfaction		
Educational Level	Dissatisfied	Satisfied
Illiterate	21 (15 %)	119 (85%)
Primary	7 (16 %)	37 (84%)
Intermediate	5 (19%)	21 (81%)
Secondary	10 (16.9%)	41 (80.4%)
College or University	3 (5.5%)	51 (94.5%)
Postgraduate Education	4 (50%)	4 (50%)
Total	50 (15.5%)	273 (84.5%)
X^2 (5, N = 323) = 12.326, p = 0.031		

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