CLINICAL PHARMACIST INTERVENTION IN MANAGING PAIN AMONG PATIENTS WITH CANCER IN HIWA ONCOLOGY HOSPITAL

Tavan Abdulrahman Marf [a] and Mohammed Omer Mohammed [b]

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ABSTRACT

Background

Cancer patients are mostly suffering from pain during cancer treatments or after chemotherapy because pain management in cancer patients is not standardized, the clinical pharmacist takes a more effective role in the improvement of the drug treatment.

Objectives

To study the role of clinical pharmacist intervention in pain management in cancer patients and compare them to the non-intervention group.

Patients and Methods

This is a cross-sectional study, conducted in Hiwa teaching hospital in Sulaimani from July 2019- January 2020, 200 patients participated in this study, they were divided into two groups randomly, the first group which includes (100 patients) with intervention by a clinical pharmacist and the second group (100 patients) was the control group with no intervention by a clinical pharmacist. All patients have malignancy and were suffering from cancer pain. They were assessed initially for their pain and followed-up for 4 weeks by direct interview or by telephone contact, the intervention group was further advised to manage any drug-related problems including (adverse effects of the drugs, dose modification, and changing drug in cooperation with the oncologist, also the patients were advised to have further adherence to the analgesic drugs. The process and outcome parameters of therapy were collected and analyzed, using SPSS-version 23.

Results

The pain scores in the intervention group were significantly improved compared to the control group ($P < 0.05$). The incidence of opioid and nonopioid adverse effects was significantly lower in the intervention group and they showed higher adherence to the analgesic drugs ($P< 0.05$)

Conclusion

Clinical pharmacist has a positive role in managing the pain of patients suffering from cancer pain, also achieving better control of the pain and by minimizing adverse effects of the analgesics and increasing adherence to their medication.

Keywords: *Cancer pain, Clinical pharmacist intervention, Sulaimani.*

[a] College of Pharmacy, University of Sulaimani, Kurdistan Region, Iraq.
Correspondence: tavanabdulrahman@gmail.com
[b] College of Medicine, University of Sulaimani, Kurdistan Region, Iraq.

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INTRODUCTION

Pain is defined as an "uncomfortable perceptual and cognitive condition associated with actual or potential injury to tissues". One of the most common conditions in cancer patients is pain that occurs in 20% to 50% of patients with cancer, approximately 80% of patients with advanced-stage cancer have moderate to severe pain that negatively affects the quality of life of the patients [1]. The primary tumor was the main cause of pain in 68% of patients [2]. Cancer therapies, including surgery, radiation therapy, chemotherapy, targeted treatment, supportive care therapy, and/or diagnostic procedures can cause pain. A systematic review of the literature reported pain complaints in 59% of patients undergoing anticancer therapy and in 33%of patients following curative therapy [3].

Cancer pain could be nociceptive pain, which is subdivided into visceral pain and somatic pain [4], or neuropathic pain which is resulted from damage to either the peripheral or central nervous system [4]. Nociceptive pain is present in about 60% of patients, neuropathic pain is present in 20%, and both types of pain present in 20% of patients [4].

The most commonly used scale for pain assessment is the Numerical Rating Scale (NRS) that ranges from 0 that indicates no pain, 1-3 for mild pain, 4-6 for moderate pain, 7-10 for severe pain. The intensity of the pain also may be detected by visual analog scale (VAS) or verbal rating scale (VRS) [5-7].

World Health Organization (WHO) in 1986, developed an analgesic step ladder for the treatment of cancer pain, it consists of three steps; step 1 that was used for mild pain using paracetamol and (NSAIDs), step 2 for moderate pain using weak opioids like (tramadol, codeine), the third step for the management of severe pain using strong opioid such as (morphine, hydromorphone, fentanyl) in all 3 steps adjuvant drugs like (antidepressants, anticonvulsants) may or may not be used [8].

Aim of the study

To evaluate the role of clinical pharmacists in pain management, adherence, and compare them to the non-interventional group.

PATIENTS AND METHODS

This is a cross-sectional, prospective study. A total of 200 adult patients diagnosed with various malignancies and has pain attending Hiwa cancer hospital in Sulaimani-Iraq, were included in this study, from July 2019-January2020. These patients divided into two groups randomly; group one receiving pain drug with supervision and intervention of the clinical pharmacist and group two who received drug therapy for the management of pain without the intervention of the clinical pharmacists. Patients were either from the inpatient ward, palliative ward, or consultation (outpatient) clinic.

The clinical pharmacist filled out the questionnaire designed for this study to follow-up the cancer patients. Assessment of pain is done by using the Numerical Rating Scale (NRS) for pain assessment, which is the most commonly used method to measure pain intensity [6]. The pain is defined as mild if NRS is 1-3, moderate if NRS is 4-7, and severe if NRS is 8-10 [7]. For the management of cancer pain, we used the world health organization's WHO three-step ladder analgesic guideline which is introduced in 1986 [8]. A medication adherence scale was used to determine adherence to analgesic drugs [9]. According to the treating Physicians, each patient initiated analgesic therapy and follow-up for four successive weeks using either non-opioid drugs or opioid drugs or both of them in treatment of pain in each group in addition to adjuvant drugs. In each week, the patients followed up either by direct interview or by phone contact; they were asked about the effectiveness of the drug or adverse effects in that week and dose modification or moving to another treatment if they need, also advice had been given. They were also asked about adherence to the drugs were all done in the intervention group, but in the non-intervention group patients' data about pain intensity, adverse effects were recorded weekly without any intervention.

This study was approved by the Ethical Committee of the Faculty of Medical Science and the Scientific Committee of the College of Pharmacy –University of Sulaimani (Registration No: 8 9/6/2019). The Agreement of the Sulaimani Directorate of Health and Hiwa Cancer Hospital were also obtained.

RESULTS

One hundred patients in the intervention group (50 males, 50 females), 100 patients in the conventional group were (43 females and 57 males). In the intervention group, the mean age was (56.7 ± 15.5) years; while in the conventional group, the mean age was (55.8 ± 16.2). The general characteristics of participants are shown in Table 1.

Categorical variables (percentage and proportions) were calculated. The Chi-square test (Fisher exact test) was used to obtain P-value. P-value was considered significant if it was less than 0.05.

The pain score using the Numerical Rating Scale (NRS) in week 1 in both groups showed an equal number of patients.The difference in the pain score in week1 between the intervention and conventional group was not significant (P-value =1), but it was highly significant in week 4 (P-value =0.0001), Table 2.

*P-value: refers to the level of significance at week4 in both groups. Categorical variables (percentage and proportions) were calculated. The Chi-square test (Fisher exact test) was used to obtain P-value. P-value was considered significant if it was less than 0.05.

In both groups, the most common adverse effect of opioids was constipation in the intervention group at week1 (21) patients while at week 4 only (1) patients have constipation. In the conventional group at week 1 (26) patients have constipation and at week 4 (11) patients still have constipation. Figure (1), and (2). Categorical variables (percentage and proportions) were calculated. The Chi-square test (Fisher exact test) was used to obtain P-value. P-value was considered significant if it was less than 0.05.

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In both groups, abdominal pain was the most common adverse effect that resulted from non-opioid administration e.g. (Paracetamol, NSAIDs, etc…)in the intervention group at week1 (19) patients suffering from it, while at week4 only (1) patients have abdominal pain. In the conventional group at week 1 (12) patients have abdominal pain, while at week 4, (5) patients still have abdominal pain. Figure (3) and (4).

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In the intervention group at week 1, dose modification was done for (56) patients while at week 4 only (15) patients need modification. In the conventional group at week 1 dose modification was done for (11) patients, while at week 4 dose modification was done for (18) patients.

The difference in the dose modification at week 1 between the intervention and the conventional group was significant, but it was not significant at week4, Table (3).

Categorical variables (percentage and proportions) were calculated. The Chi-square test (Fisher exact test) was used to obtain P-value. P-value was considered significant if it was less than 0.05.

In the intervention group before intervention (20) patients were highly adhered and (8) patients moderately adhered to analgesic drugs and (72) patients had low adherence, while after intervention (46) patients became highly adhered to the analgesic drugs and (24) patients were moderately adhered and (30) patients remained poorly adhered to the analgesic drugs, Table (4). P-value: refers to the level of significance between week1, and week 4 in the intervention group.

*P-value: refers to the level of significance between week1, and week 4 in the conventional group.

Categorical variables (percentage and proportions) were calculated. The Chi-square test (Fisher exact test) was used to obtain P-value. P-value was considered significant if it was less than 0.05.

Table 1. Demographic characteristics of the participants.

Age group (year)	Intervention group Frequency (%)	Conventional group Frequency (%)	P-value
Mean ± SD	56.66 ± 15.5	55.81 ± 16.22	
Less than 35	13(13.0)	16(16.0)	
36-50	17(17.0)	17(17.0)	0.730
51-65	38(38.0)	37(37.0)	
66 above	32(32.0)	30(30.0)	
Sex			
Female	50(50.0)	43(43.0)	0.321
Male	50(50.0)	57(57.0)	
Address			
Inside Sulaimani	42(42.0)	40(40.0)	0.774
Outside Sulaimani	58(58.0)	60(60.0)	
Education level			
Illiterate	74(74.0)	72(72.0)	
Primary	16(16.0)	15(15.0)	0.373
Secondary	8(8.0)	6(6.0)	
High-school	2(2.0)	7(7.0)	
Occupation			
Housewife	39(39.0)	36(36.0)	
Unemployed	34(34.0)	36(36.0)	0.889
Private(Non-governmental)	16(16.0)	19(19.0)	
Governmental	11(11.0)	9(9.0)	
Marital state			
Single	7(7.0)	11(11.0)	
Married	80(80.0)	79(79.0)	0.526
Widow	13(13.0)	10(10.0)	
Smoking			
No	85(85.0)	82(82.0)	0.568
Yes	15(15.0)	18(18.0)	
Drinking alcohol			
No	99(99.0)	98(98.0)	0.561
Yes	1(1.0)	2(2.0)	

Table 2: Severity of pain in the intervention group and conventional group

A score of the pain	Intervention group		Conventional group		P-value	*P-value
	Week 1 Frequency (%)	Week 4 Frequency (%)	Week 1 Frequency (%)	Week 4 Frequency (%)		
Mild pain (1-3)	0 (0.0)	29 (29.0)	0(0.0)	5(5.0)	1	0.0001
Moderate pain (4-6)	14 (14.0)	67 (67.0)	14(14.0)	27(27.0)		
Severe pain (7-10)	86 (86.0)	4 (4.0)	86(86.0)	68(68.0)		

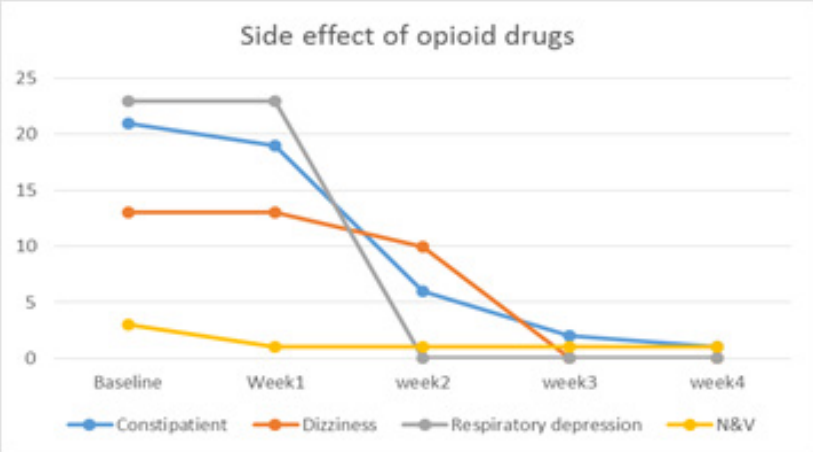

Figure 1. Opioid adverse effects in the intervention group.
*** N&V; Nausea and Vomiting**

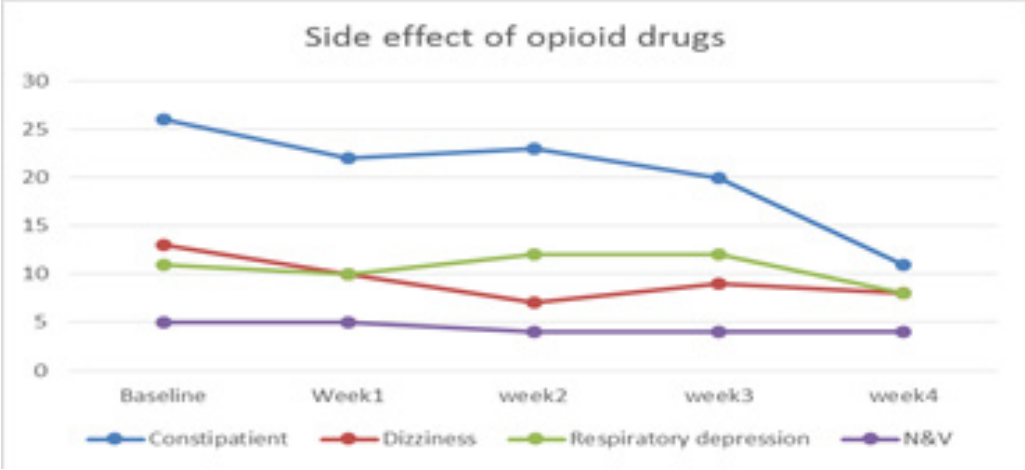

Figure 2. Opioid adverse effects in the conventional group.

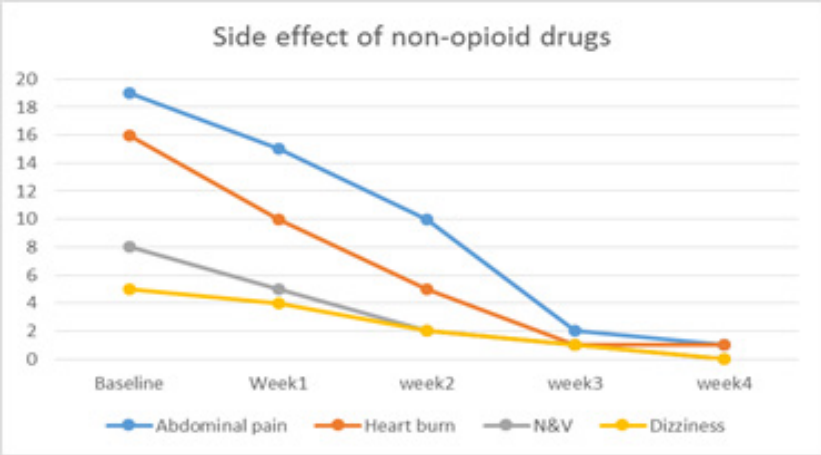

Figure 3. Adverse effects of non-opioid drugs in the intervention group.

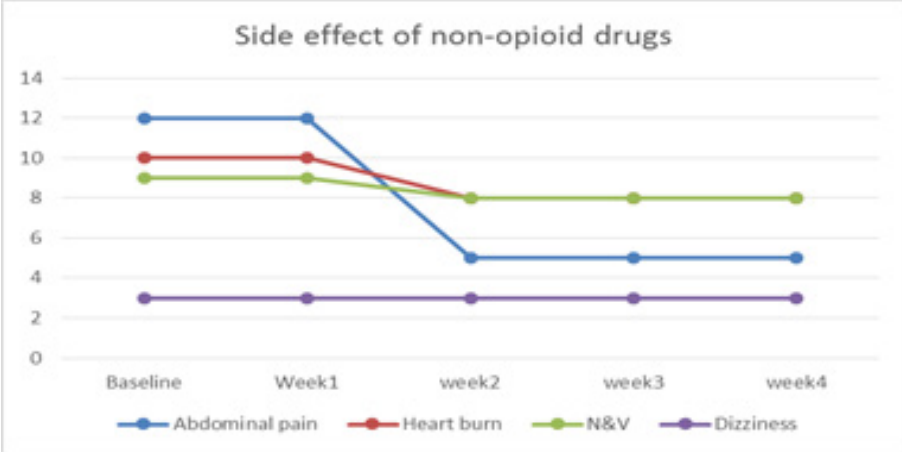

Figure 4. Adverse effects of non-opioid drugs in the conventional group

Table 3. Drug modification effects in intervention and conventional group

Drug modification	Intervention group Frequency (%)		Conventional group Frequency (%)		P-value	* P-value
	Week1	Week4	Week1	Week4		
Increasing dose	11 (11.0)	4 (4.0)	4 (4.0)	6(6.0)		
Decreasing dose	15 (15.0)	4 (4.0)	0 (0.0)	5 (5.0)		
Stopping drug	15 (15.0)	4 (4.0)	2 (2.0)	2 (2.0)	0.0001	0.798
Adding drug	15 (15.0)	3 (3.0)	2 (2.0)	5 (5.0)		
Drug change	30 (30.0)	21 (21.0)	10 (10.0)	14 (14.0)		
Route change	8 (8.0)	4 (4.0)	5 (5.0)	5 (5.0)		

P-value: refers to the level of significance at week1 in both groups.

***P-value: refers to the level of significance at week4 in both groups**

Table 4. Adherence in the intervention and conventional group

Adherence in the intervention group				Adherence in the conventional group			
Score	**Week 1**	**Week 4**	**P-value**		**Week 1**	**Week 4**	***P-value**
High	20 (20.0)	46 (46.0)	0.001	**High**	25 (25.0)	11 (11.0)	0.286
Medium	8 (8.0)	24 (24.0)	0.001	**Medium**	12 (12.0)	45 (56.0)	0.0001
Low	72 (72.0)	30 (30.0)	0.0001	**Low**	63 (63.0)	44 (44.0)	0.001

DISCUSSION

In this study, Age group of most of the patients were (>60 years old) and there was an equal number of male and female participated in this study and there are no significant differences between the intervention group and conventional group regarding age and gender of the patients this result was consistent with the study done in China by Jian et al and Yun-Peng et al [10, 11-15].

In this study most of the patients (86) suffered from severe pain at the baseline, this is in contrast to the study done in China by Jinmei Liu et al, in this study minimum number of patients have severe pain only (9) patients [12], this can be explained by that in this study most of the patients were at stage four of cancer and due to the metastasis to other parts of the body including bone.

At week1, there is no significant difference in pain score between the two groups, and this result is supported by a study done in China by Yan Wang et al and Hongbin et al [10]. The patients have been selected from the same population.

The score of the pain at week 4 after the intervention was changed, most of the severe pain changed to mild or to moderate pain and this was supported by the study done in China in 2020 by Jinmei Liu, et al.[12].

In this study, that clinical pharmacist makes a significant role in controlling cancer pain, and pain score significantly decreased compared with the conventional group and this study was consistent with the study done in China by Jian Chen et al, Yan Wang et al. [10, 13]. The result of this study has improved the role of clinical pharmacist in the standardization and efficacy of cancer pain therapy.

In this study, the opioid adverse effects (constipation, dizziness, respiratory depression, nausea, and vomiting) were significantly decreased after the intervention and managing these adverse effects, and this result is supported by a study done in China by Jian Chen et al [13].

In this study, most of the drug-related problem is due to the patients not understanding how and why to take medications after they had been prescribed. In some cases, medication was ineffective, and the patient required a higher dose or change in treatment by this change most of the drug-related problems were solved, this result supported by 2 studies done in the United Kingdom by Zoe Edwards et al and DS Needham et al, these studies shown that pharmacist-delivered medicines consultations were feasible and acceptable to patients and had the potential to benefit clinical care [14, 15].

Also, the adherence of the patients to analgesic drugs was significantly improved in the intervention group and improving best controlling of the pain comparing to the conventional group and this result is supported by a study done by Chou et al in Taiwan [7], and Christine et al [16], and a study in China done by Liu Jinmei et al in 2020 [12] were demonstrated that good adherence to the analgesic drugs improves the pain control.

In conclusion; clinical pharmacist has a positive role in decreasing pain intensity, and reducing pain therapy complications and increasing adherence of the patients to analgesic drugs.

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