https://doi.org/10.31351/vol33iss(4SI)pp187-194

Evaluation of Handling, Storage, and Disposal Practices of Oral Anticancer Medications among Cancer Patients at Home Setting

Mayyadah Q. Kadhim [*,1] and Dheyaa J. Kadhim [2]

[1]Ministry of Health, Baghdad Teaching Hospital, Medical City, Baghdad, Iraq.

[2]Department of Clinical Pharmacy, College of Pharmacy, University of Baghdad, Baghdad, Iraq.

***Corresponding author**

Received 23/4/2024, Accepted 21/7/2024, Published 15/2/2025

Abstract

Oral anticancer medicines are frequently administered to patients with cancer. Regrettably, many medications are administered without appropriate recommendations about handling practices. This study aims to assess the handling, storage, and disposal practices of oral anticancer medication among cancer patients at home. A cross-sectional study was conducted from December 2023 to February 2024 on adult cancer patients who were administered oral anticancer at the Hematology and Bone Marrow Transplant Center in (Baghdad/Iraq) using a pre-validated questionnaire. In total, 300 patients were interviewed. Regarding handling practices, most patients (96.7%) never wore gloves. Among all patients, (53.3%) reported "Never" washing their hands after taking oral anticancer medications. Additionally, (90%) of the patients indicated that they had never received information on the proper handling and storage of oral anticancer medications. Concerning storage practices, almost all (97-99%) of participating patients kept their anticancer medicines away from the reach of children and pets, away from extreme cold/heat, and kept them in their original containers. Storage of oral anticancer drugs in the fridge was reported by (24%) of the patients. Concerning disposal practices, most participating patients (86%) reported not having any expired, unused, or extra medicines. However, (8.3%) of patients dispose of unused medicines in the trash, while (4%) return them to either the medical clinic or the pharmacy, and (0.7%) flush them down the toilet. Patients of younger age were significantly more likely to dispose of extra/expired oral anticancer medications in the trash than other age groups. The current findings of this study propose that patients' practices of handling oral anticancer medicines contradict some of the essential published recommendations. Consequently, there is a need for proper and comprehensive education through the use of different formats to reduce the risks associated with exposure to these medications.

Keywords: Cancer patients, Disposal practices, Handling practices, Oral anticancer medications, Storage practices.

Introduction

Most medications utilized in oncology and hematology are administered by injection route. Over the preceding decade, there has been a significant increase in the approval of oral anticancer medications, becoming more commonly prescribed [(1,2)]. Several types of treatments are used for cancer, such as chemotherapy agents, immunotherapy agents, hormone therapy agents, radiation therapy, and surgeries [(3,4)]. Chemotherapy is known under different names, such as anticancer, cytotoxic, or antineoplastic drugs [(5,6)]. Cancer patients prefer the oral anticancer drugs at home due to ease of administration, more convenience, improved quality of life, and fewer clinic visits [(7,8)].

Nevertheless, anticancer agents administered orally can have adverse health effects similar to injectable agents [(9,10)]. Consequently, there has been a shift in responsibility from oncology teams in the healthcare setting to patients and their families at home [(7,11)]. Oral anticancer medications can be associated with genotoxicity, carcinogenicity, reproductive toxicity, toxicity for organs at low doses, and teratogenicity characteristics. These characteristics classify these drugs as hazardous and require appropriate handling and disposal to minimize exposure [(12,13)]. Therefore, most oral anticancer medicines are listed in the National Institute for Occupational Safety and Health (NIOSH) list of Antineoplastic and Other hazardous Drugs [(14)]. Although several guidelines have been published for handling hazardous drugs in healthcare institutions, home settings recommendations are limited [(15-17)]. The recommendations depend on specialist opinion, earlier issued recommendations, and presence of institutional or national policies [(18)].

In 2022, the International Society of Oncology Pharmacy Practitioners (ISOPP) updated its standards for the safe handling of cytotoxic drugs to involve some recommendations for home care and handling with oral chemotherapy [19]. Exposure can occur through direct skin contact with medications during daily care for patients taking oral anticancer medications or indirectly with body fluids excreted by the patient, such as vomit, urine, feces, blood, sweat, saliva, or semen [19-23].

Therefore, the patient and caregiver should wear gloves during drug administration and wash their hands with soap and water before and after glove application to avoid spreading residues of these medications to household surfaces [7,12,24]. In addition, gloves should be utilized when handling the patients' clothes and bed linen contaminated by body excretions and washed separately from other laundry by machine-washing rather than hand washing [19]. Some patients may experience difficulty swallowing medication, requiring them to open capsules or crush tablets. However, this practice is considered inappropriate as it may lead to inhaling fine drug particles that may have teratogenic and/or mutagenic effects and can cause contaminate the place [19,20,25,26].

Patients taking oral anticancer medications should be instructed to double-flush the toilet after each use and approximately 48 to 72 hours after discontinuing oral anticancer medications [27]. Improper storage of anticancer medications may negatively impact it, diminish its clinical efficacy, increase the risk of side effects, and make it unsuitable for dispensing if unused medication is returned to the pharmacy. Therefore, anticancer drugs should be kept in their original container (e.g., bottles or blisters) to shield them from light and moisture at temperatures below 25 C or 30 C [28]. Unused or expired medications are considered medication waste, and should be returned to a pharmacy rather than disposed of in the trash, flushed down the toilet, rinsed down a sink, or given to friends. Dispensing medication in specified quantities helps minimize wastage and ensures efficient use of medications and environmental protection [18,29-31].

Unfortunately, most anticancer medications are dispensed without appropriate education regarding handling and storage practices. The pharmacist plays the most prominent role in educating patients of cancer during the dispensing of treatment [2,32]. Different studies have been conducted, and the practices with oral anticancer medications have been included. In 2021, a cross-sectional survey to assess the safe practices of handling, storage, and disposal of oral anticancer medications among cancer patients and caregivers at home was conducted by Hassan et al in Oman and found that over half of patients used unsafe handling procedures [12]. In 2020, another cross-sectional study in Saudi Arabia, performed by Algethami et al., showed that most patients did not wear gloves, and a small percentage of caregivers wore them [18]. The current study aimed to evaluate the handling, storage, and disposal practices of oral anticancer medications among Iraqi cancer patients at home.

Patients and Methods

Study design

The current study was a cross-sectional interview-based study using a pre-validated questionnaire [18] performed at the Center for Hematology and Bone Marrow Transplantation in (Baghdad/Iraq) from December 2023 to February 2024 using a convenience sampling technique.

Inclusion Criteria

Patients eligible for inclusion were adults with cancer aged 18 years or more, taking at least one oral anticancer included in the NIOSH list of antineoplastic and hazardous drugs [14], and taking their medication by themselves or by (themselves and caregivers).

Exclusion Criteria

Patients who didn’t consent to participate or did not provide complete responses to the study questionnaire were excluded from the study.

Study instrument

The current study was done using a pre-validated questionnaire [18]. The questionnaire form was categorized into four parts containing 16 questions. The first part included sociodemographic data such as patients' age, sex, education level, and oral anticancer medication name. The second part was handling practices, consisting of 7 closed-ended questions. The third part involved 4 closed-ended questions to evaluate their practices toward storing oral anticancer drugs. The last part of the questionnaire contained one question to determine their disposal practices. Permission to use the questionnaire has been obtained from the author through email. The original questionnaire was available in English and Arabic, and the Arabic version was used. A researcher filled in the participants' answers after explaining the purpose of the questionnaire and assuring them that it would take less than 15 minutes to complete. For ethical reasons, so that patients are not left without sufficient information regarding the correct handling of their oral anticancer medications, the researcher educated the patient verbally after completing the questionnaire and giving a brochure paper containing the recommendations for safe handling supported by pictures to reinforce the information.

Statistical analysis

The completed data from the questionnaires were inputted into a Microsoft Office Excel document. Data was analyzed using Statistical Package for the Social Sciences (SPSS) software version 25. We calculated the frequency and percentage of the patient characteristics and practice items. A four-point Likert scale was used to answer the questions in the practice domains (never, sometimes, always, and not applicable). Fisher's Exact Test was used to measure the correlation between the patient characteristics (age, sex, and education) and practice (handling, storing, and disposing) levels toward anti-cancer medication.

Results

The study included a total of 300 patients. The majority of them were male (57%). Approximately (47%) of participants fell within the age range of 40-60 years. The participants had different levels of education, with primary school (32.7%) and intermediate/secondary (31%) being the predominant levels. While (10.7%) of them had never attended school. The most commonly prescribed oral anticancer medicines among patients were imatinib (37%) and hydroxyurea (32.3%) (Table 1).

Practices related to handling and storage of oral anticancer therapy

Almost all participating patients (96.7%) never wore gloves when taking their anticancer therapy. Additionally, more than half (53.3%) of patients never washed hand after taking oral anticancer medications. Approximately (90%) of the participating patients have not received information about how to handle or store anticancer medications. Almost all (97-99%) participating patients kept their anticancer medication away from the reach of children and pets, away from extreme cold/heat, and kept them in their original containers. On the other hand, (76%) of them did not store their anticancer in refrigerator (Table 2).

There was a significant difference in drug storing in refrigerator according to patient education. Patients with higher education were significantly higher storing their anticancer therapy in refrigerator compared to the patients with primary school or lower (Table 3).

Table 1. Patients' demographics, their oral anticancer medications and their taking behaviors.

Variables	Categories	Frequency	Percent
Age	18-39 Years	90	30.0
	40-60 years	141	47.0
	>60 years	69	23.0
Sex	Male	171	57.0
	Female	129	43.0
Education level	Never been in school	32	10.7
	Primary school	98	32.7
	Intermediate/secondary	93	31.0
	Bachelor's	29	9.7
	Diploma	44	14.7
	Higher education	4	1.3
Name of the oral anti-cancer/ chemotherapy drug	Imatinib tablet	111	37.0
	6- mercaptopurine tablet	26	8.7
	Methotrexate tablet	25	8.3
	Hydroxyurea capsule	97	32.3
	Nilotinib capsules	38	12.7
	Bosutinib tablet	29	9.7

Table 2. Practices related to handling and storage of oral anticancer therapy

Handling of oral anticancer therapy				
Item	**Always, N (%)**	**Sometimes N (%)**	**Never N (%)**	**Not applicable N (%)**
Wearing gloves when take medication(s).	6 (2.0)	4 (1.3)	290 (96.7)	-
Washing hands after taking the oral chemotherapy medication.	107 (35.7)	33 (11)	160 (53.3)	-
Split or crush oral chemotherapy medication before taking it.	3.0 (1.0)	5 (1.7)	157 (52.3)	135 (45)

	Nurses No. (%)	Pharmacists No. (%)	Physicians No. (%)	Not given information No. (%)
Information on how to handle and store oral chemotherapy medication.	1.0 (0.3)	3 (1.0)	25 (8.3)	271 (90.3)
Storage of oral anticancer therapy				
			Yes [No. (%)]	**No [No. (%)]**
Kept out of reach of children and pets			297 (99.0)	3 (1.0)
Kept away from extreme cold, heat, and humidity			291 (97.0)	9 (3.0)
Kept in the fridge			72 (24.0%)	228 (76.0)
Kept in the original container			296 (98.7)	4 (1.3)

Table 3. Storage practices according to the patients' education

Should drug kept out of reach of children			**Yes**	**No**	**P-value**
Education	Primary school or lower	Count	128	2	0.791
		%	98.5%	1.5%	
	Intermediate or secondary school	Count	92	1	
		%	98.9%	1.1%	
	College or higher	Count	77	0	
		%	100.0%	0.0%	
Should drug be stored away from heat cold			Yes	No	
Education	Primary school or lower	Count	127	3	0.691
		%	97.7%	2.3%	
	Intermediate or secondary school	Count	89	4	
		%	95.7%	4.3%	
	College or higher	Count	75	2	
		%	97.4%	2.6%	
Is drug stored in refrigerator			Yes	No	
Education	Primary school or lower	Count	24	106	**0.045***
		%	18.5%	81.5%	
	Intermediate or secondary school	Count	22	71	
		%	23.7%	76.3%	
	College or higher	Count	26	51	
		%	33.8%	66.2%	
Is drug stored in original packaging			Yes	No	
Education	Primary school or lower	Count	129	1	0.581
		%	99.2%	0.8%	
	Intermediate or secondary school	Count	92	1	
		%	98.9%	1.1%	
	College or higher	Count	75	2	
		%	97.4%	2.6%	

*Significant (P-value< 0.05) according to Fisher's Exact Test

Disposal practices of extra or expired oral anticancer therapy

The vast majority (86%) of the participating patients never have any extra oral anticancer medication. On the other hand, (8.3%) of the patients have disposed the extra/expired medications into trash while only (4.0%) returned to pharmacy or doctor's office (Table 4).

Table 4. Disposal practices of extra or expired oral anticancer therapy.

Items	**Frequency**	**Percent**
Never have any extra oral chemotherapy medication	258	86.0%
Trash	25	8.3%
Return to pharmacy or doctor's office	12	4.0%
Flush down toilet	2	0.7%

Other (Burn)	2.0	0.7%
Give it to friends or charities	1.0	0.3%
Other (Buried underground)	1.0	0.30%

There was no significant difference in disposing oral anticancer therapy in trash according to patient education, and patient sex. However; there was a significant difference in disposal practices of anticancer therapy according to patient age. More specifically, patients with younger age were significantly more likely to dispose extra/expired oral anticancer medications into trash compared to other age groups (Table 5).

Table 5. Disposal practices of anticancer therapy according to patients' education levels, sex, and age.

			Disposing in trash		P-value
			No	Yes	
Education	Primary school or lower	Count	122	8	0.215
		%	93.8%	6.2%	
	Intermediate or secondary school	Count	86	7	
		%	92.5%	7.5%	
	College or higher	Count	67	10	
		%	87.0%	13.0%	
Sex	Male	Count	157	14	0.539
		%	91.8%	8.2%	
	Female	Count	118	11	
		%	91.5%	8.5%	
Age	18-39 years	Count	79	11	**0.045***
		%	87.8%	12.2%	
	40-60 years	Count	128	13	
		%	90.8%	9.2%	
	>60 years	Count	68	1	
		%	98.6%	1.4%	

*Significant (P-value <0.05) according to Fisher's Exact Test

Discussion

With the rise in the utilization of oral anticancer medication at home, patients need to follow safe handling, storage, and disposal practices. Adherence to proper practices means safeguarding the safety of patients and all family members from hazardous medications. Results of this current study indicated that almost all the participants (about 97.0%) answered that they did not wear gloves while handling the medication; only (2%) of patients reported always wearing gloves. In addition, more than half (about 53.0%) of patients never washed hand after taking oral anticancer medications. A comparable finding was reported by Algethami *et al*. in Saudi Arabia where majority of the patients (88%) did not wear gloves and about (43.0%) stated that they never washed their hands after handling anticancer medications [(18)]. This unsafe practice highlights the gap in handling oral anticancer medication among patients, which can lead to increased exposure to these agents. In addition, it can place patients and their families at potential risk for acute and chronic health effects such as adverse reproductive effects, leukemia, and other cancers [(15)]. Missing patients' education may be a reason for these inconsistent practices with published recommendations since approximately (90.0%) of patients reported that they did not receive any information about proper practices for handling and storing oral anticancer medicines. Only (8.0%) of patients have been informed by oncology physicians. A possible explanation may be that healthcare providers are unaware of these recommendations to communicate them to patients. In addition, patients were surprised when they heard these instructions due to the belief that oral medication is safer than intravenous. Regarding storage practice, almost all (97-99%) participating patients kept their anticancer medication away from the reach of children and pets, away from extreme cold/heat, and kept them in their original containers. On the other hand, about one quarter (24.0%) of them stored their anticancer in fridge. Two previous studies stated that most patients (90%) kept oral anticancer medications away from extreme heat, cold, and humidity [(18,33)]. Additionally, patients with higher education were significantly higher storing their anticancer therapy in refrigerator compared to the patients with primary school or lower education. The belief that storing

medications in the refrigerator is the correct way to store all medications is a misconception. Published recommendations involve several practices that should be avoided, such as exposing medication to direct sunlight or moist areas, leaving it within reach of children or pets, and crushing or breaking the medication [33]. Keeping oral anticancer medications in the fridge may expose them to extra cold or moisture that could affect the physical properties of the medicines [18]. According to the disposal practices, the vast majority (86%) of the participating patients never have any extra oral chemotherapy medication. This might be because all the patients receive their medications according to a fixed, periodic schedule and in quantities that correspond to that period. On the other hand, (8.3%) of the patients have disposed the extra/expired medications into trash while only (4.0%) returned to pharmacy or doctor's office. Hassan *et al*. study in Oman discovered that (36%) of the patients disposed of their medications in the household trash, (55%) returned medications to the hospital, and (1%) flushed their medicine in the toilet [12]. Algethami *et al*. found that (51%) of patients did not keep excess medication, (20%) returned unwanted drugs to the hospital, (22%) disposed of their medications in the household trash, and (1%) flushed their unused medications down the toilet [18]. The incorrect disposal of unused medicines, such as those discarded in the trash, will end up in landfills and subsequently contaminate surface water. Unused medication may also be flushed into the toilet or drain channeled into the sewage system, resulting in direct surface water contamination. Contaminated surface water with pharmaceutical ingredients would harm humans, animals, and aquatic life. Managing these pharmaceutical ingredients in the environment is challenging and potentially costly [34]. In the current study, patients with younger age were significantly more likely to dispose extra/expired oral anticancer medications into trash compared to other age groups. Older patients may have more experience with anticancer medications, making them more likely to receive advice regarding drug disposal. There are some limitations in the current study. First, this was a single-center study, so the findings can not be generalized to cancer patients in other oncology centers. Second, the study addressed only a few medications. Therefore, there is a need to include a larger number of oral anticancer medications. Despite this limitation, the strengths of this study are as follows. It was the first study exploring the handling of oral anticancer medications among Iraqi cancer patients at home, assessing their awareness of international safety guidelines to minimize family exposure to risks. In addition, it includes larger number of patients compared to previous studies conducted in other countries. This study might help patients to optimize their practices of handling, storage, and disposal through education and also dissemination of information among patients in healthcare settings.

Conclusion

The findings of the current study propose that patients' handling practices of oral anticancer medications contradict essential published recommendations (wearing of gloves, and washing hand when taking their anticancer therapy). Furthermore, most of the participating patients have not received information about how to handle or store anticancer medications. Consequently, there is a need for proper and comprehensive education to minimize these poor handling practices. However; patients' handling practices were good concerning some other recommendations (keeping their anticancer medication away from the reach of children, away from extreme cold/heat, and kept them in their original containers).

Acknowledgment

The authors sincerely thank Dr Mohammed Salim and Dr Tarik Alobaidy of Hematology and Bone Marrow Transplant Center in Medical City for their support in implementing the project. The authors express their gratitude to all the patients who took part in this study.

Conflicts of Interest

The authors disclosed no conflicts of interest related to the research, authorship, and/or publication of this article.

Funding

This study did not receive any funding.

Ethics Statements

The scientific and ethical committee of the College of Pharmacy-Baghdad University approved the study (approval name: RECAUBCP201020236, date 20/10/2023). Ethical approval was obtained to conduct the study from the Iraqi Ministry of Health and the hospital director of the Hematology and Bone Marrow Transplant Center (number: 44262, date 21/11/2023). Patients' verbal consent was obtained to participate in this study.

Author Contribution

The second author conceived the idea of this study. The first author conducted the data collected and researched literature. Both authors reviewed the results and approved the final version of the manuscript.

References

1. Yang S, Patel P, Corcoran A, *et al*. Gaps in Patient Education on Safe Handling and Disposal of Oral Chemotherapy Drugs: A Pilot

Prospective Cohort Survey Study. Journal of Contemporary Pharmacy Practice. 2022;70(2):23-33
2. Macé F, Peyron C, Cransac A, *et al*. Oral anticancer medicine interventions: A cross-sectional study in French community pharmacies. Journal of Oncology Pharmacy Practice. 2024;0(0):1-10.
3. Ahmed AE, Jaddoue IA. Assessment of Nurses' Intervention toward Treatment Modalities of Oncology Unit in Baghdad Pediatric hospitals. International Journal of Scientific and Research Publications. 2016;6(9):364-368.
4. Mahmoud I, Mohammed K. Evaluation of the Nursing Intervention for Patients with Cancer Undergoing Chemotherapy in AL_Amal National Hospital for Cancer Management and Baghdad Teaching Hospital. Kufa Journal for Nursing Sciences. 2015;5(2):1-8.
5. Mansour KA, Hussin BK. Effectiveness of an educational program on nurses' knowledge regarding management of extravasation vesicant intravenous chemotherapy at oncology centers in Baghdad city. Iraqi National Journal of Nursing Specialties. 2019;32(2):75-86.
6. Fadhil I, Hassan H. Evaluation of Nurses' Practices toward Safe Intravenous Chemotherapy Infusion in Baghdad City Hospitals. Iraqi National Journal of Nursing Specialties. 2018;31(2):43-56.
7. Akkawi El Edelbi R, Eksborg S, Ekman J, *et al*. Improved home management of oral pediatric anticancer drugs as a result of an intervention comprising practical training, written instructions and movie clips: A pilot study. Journal of Oncology Pharmacy Practice. 2023;29(4):818-825.
8. Dahmani S, Cerbito EF, Hamad A, *et al*. Predictors of community pharmacists' readiness to manage the effective and safe use of oral anticancer medicines in a developing setting. Journal of Oncology Pharmacy Practice. 2023;29(7):1580-1589.
9. Al-Attar WM, Al-Gannem M. Effectiveness of the nursing educational program upon nurse's knowledge and practices concerning chemotherapy precautions. Journal of Nursing and Health Science. 2015;4(6):7-13.
10. Kamil AH, Mohammed SJ. Effectiveness of an Instructional Program on Knowledge of Patients Undergoing Chemotherapy toward Self-care in Baqubah Teaching Hospital. Indian Journal of Public Health Research and Development. 2020;11(02):1049-1054.
11. Kinnaer LM, Kenis I, Foulon V, *et al*. Perspectives on seamless collaboration between primary and secondary care for oral anticancer treatments. Journal of Interprofessional Care. 2023;37(5):1-12.
12. Hassan MM, Al-Marzooq D, Al-Habsi H, *et al*. Patients' knowledge and awareness of safe handling of oral anticancer agents at Sultan Qaboos University Hospital in Oman. Journal of Oncology Pharmacy Practice. 2021;29(1):1-7.
13. Centers for Disease Control and Prevention. NIOSH alert: Preventing occupational exposures to antineoplastic and other hazardous drugs in health care settings. Cincinnati: National Institute for Occupational Safety and Health. 2004 Sep.
14. NIOSH [2020]. NIOSH list of hazardous drugs in healthcare settings 2020. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. (Accessed 10/10/2023). Available from: https://www.cdc.gov/niosh/docket/review/docket233c/pdfs/DRAFT-NIOSH-Hazardous-Drugs-List-2020.pdf
15. NIOSH [2023]. Managing hazardous drug exposures: information for healthcare settings. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (Accessed 10/10/2023). Available from: https://doi.org/10.26616/NIOSHPUB2023130.
16. Power LA, Coyne JW. ASHP guidelines on handling hazardous drugs. American Journal of Health-System Pharmacy. 2018;75(24):1996-2031.
17. Neuss MN, Polovich M, McNiff K, *et al*. 2013 updated American Society of Clinical Oncology/Oncology Nursing Society chemotherapy administration safety standards including standards for the safe administration and management of oral chemotherapy. Journal of Oncology Practice. 2013;9(2S):5s-13s.
18. Algethami AA, Alshamrani MA, AlHarbi AM, *et al*. Evaluation of handling, storage, and disposal practices of oral anticancer medications among cancer patients and their caregivers at home setting in the Princess Noorah Oncology Center. Journal of Oncology Pharmacy Practice. 2020;27(1):1-6.
19. Nabhani-Gebara S. ISOPP Standards for the safe handling of cytotoxics. Journal of Oncology Pharmacy Practice. 2022;28(3):1-126.
20. Patel A, Nguyen CM, Willins K, *et al*. Improving Pharmacist-Led Pediatric Patient Education on Oral Chemotherapy at Home. Children. 2023;10(10):1-13.
21. Cass Y, Connor TH, Tabachnik A. Safe handling of oral antineoplastic medications: Focus on targeted therapeutics in the home setting. Journal of Oncology Pharmacy Practice. 2016;23(5):1-29.

22. Abid JM, Mohammed WK. Effectiveness of an Instructional Program on Patients' Knowledge about Home Safety While Receiving Anti-Cancer Medications at Al-Karama Teaching Hospital in Al-Kut City. Iraqi National Journal of Nursing Specialties. 2021;34(2):8-15.

23. Bakry H, Waly E. Effectiveness of health education on safety measures for family caregivers of cancer patients receiving cytotoxic drugs. Zagazig University Medical Journal. 2022;30(1.2)121-127.

24. Bettencourt E. Oral chemotherapy. Oral chemotherapy-What Your Patients Need to Know. Oncology Issues. 2014;29(6):44-51.

25. Siden R, Kem R, Ostrenga A, *et al*. Templates of patient brochures for the preparation, administration and safe-handling of oral chemotherapy. Journal of Oncology Pharmacy Practice. 2013;20(3):1-8.

26. Wagner C, Adams V, Overley C. Alternate dosage formulations of oral targeted anticancer agents. Journal of Oncology Pharmacy Practice. 2021;27(8):1963-1981.

27. Marshall VK, Cairns PL. Challenges of caregivers of cancer patients who are on oral oncolytic therapy. Seminars in Oncology Nursing. 2019;35(4):363-369.

28. Vlieland ND, van den Bemt BJ, van Riet-Nales *et al*. Actual versus recommended storage temperatures of oral anticancer medicines at patients' homes. Journal of Oncology Pharmacy Practice. 2017;25(2):382-389.

29. Goodin S, Griffith N, Chen B, *et al*. Safe handling of oral chemotherapeutic agents in clinical practice: recommendations from an international pharmacy panel. Journal of oncology practice. 2011;7(1):7-12.

30. Smale EM, van Vlijmen B, Colen HB, *et al*. Feasibility of an individualized dispensing program for patients prescribed oral anticancer drugs to prevent waste. JCO Oncology Practice. 2023;19(4):618-629.

31. Seehusen DA, Edwards J. Patient practices and beliefs concerning disposal of medications. The Journal of the American Board of Family Medicine. 2006;19(6):542-547.

32. Mohammed SI, Dawood EB, Abaas IS. Perceptions and attitudes of community pharmacists towards patient counseling and continuing pharmacy education programs in Iraq. Iraqi Journal of Pharmaceutical Sciences. 2019;28(2):30-6.

33. Trovato JA, Tuttle LA. Oral chemotherapy handling and storage practices among Veterans Affairs oncology patients and caregivers. Journal of Oncology Pharmacy Practice. 2014;20(2):88-92.

34. Wang LS, Aziz Z, Chik Z. Disposal practice and factors associated with unused medicines in Malaysia: a cross-sectional study. BMC Public Health. 2021;21(1):1-10.

تقييم ممارسات التعامل والتخزين والتخلص من الأدوية المضادة للسرطان عن طريق الفم بين مرضى السرطان في المنزل

مياده قاسم كاظم*[1]و ضياء جبار كاظم[2]

[1]وزارة الصحة ، مستشفى بغداد التعليمي، مدينة الطب، بغداد، العراق.

[2]فرع الصيدلة السريرية، كلية الصيدلة، جامعة بغداد، بغداد، العراق.

الخلاصة

توصف الأدوية عن طريق الفم عادة للعديد من مرضى السرطان. وللأسف، يتم صرف معظمها دون الحصول على المشورة المناسبة حول ممارسات التعامل. كان الهدف من هذه الدراسة هو تقييم ممارسات التعامل مع الأدوية المضادة للسرطان عن طريق الفم وتخزينها والتخلص منها بين مرضى السرطان في المنزل. أجريت دراسة مقطعية في الفترة من كانون الاول ٢٠٢٣ إلى شباط ٢٠٢٤ على مرضى السرطان البالغين الذين تلقوا مضادات السرطان عن طريق الفم في مركز أمراض الدم وزراعة نقي العظم في (بغداد/العراق) باستخدام استبيان تم التحقق منه مسبقًا. تمت مقابلة ما مجموعه ٣٠٠ مريض. فيما يتعلق بممارسات التعامل، فإن معظم المرضى (٩٦,٧٪) لم يرتدوا القفازات مطلقًا. من بين جميع المرضى، أبلغ (٥٣,٣٪) عن عدم غسل اليدين أبدًا بعد تناول الأدوية المضادة للسرطان عن طريق الفم. بالإضافة إلى ذلك، أفاد (٩٠٪) من المرضى أنهم لم يتم تثقيفهم مطلقًا بشأن التعامل الآمن وتخزين الأدوية المضادة للسرطان عن طريق الفم. فيما يتعلق بممارسات التخزين، احتفظ جميع المرضى المشاركين تقريبًا (٩٧-٩٩٪) بأدويتهم المضادة للسرطان بعيدًا عن متناول الأطفال والحيوانات الأليفة، بعيدًا عن الحرارة/البرودة الشديدة واحتفظوا بها في عبواتها الأصلية. تم الإبلاغ عن تخزين الأدوية المضادة للسرطان عن طريق الفم في الثلاجة من قبل (٢٤٪) من المرضى. فيما يتعلق بممارسات التخلص، فإن غالبية المشاركين (٨٦٪) لم يكن لديهم أي أدوية غير مستخدمة أو منتهية الصلاحية أو إضافية. لكن؛ (٨,٣٪) من المرضى يتخلصون من الأدوية غير المستخدمة في سلة المهملات، و(٤٪) يعيدونها إلى الصيدلية أو عيادة الطبيب، و(٠,٧٪) يرمونها في المرحاض. كان المرضى الأصغر سنًا أكثر ميلا للتخلص من الأدوية المضادة للسرطان الإضافية أو منتهية الصلاحية في سلة المهملات مقارنة بالفئات العمرية الأخرى. تشير نتائج الدراسة الحالية إلى أن ممارسات التعامل مع الأدوية المضادة للسرطان عن طريق الفم لا تتفق مع توصيات اساسية منشورة. وبالتالي، هناك حاجة إلى التثقيف المناسب والشامل من خلال استخدام الأشكال المختلفة للحد من المخاطر المرتبطة بالتعرض لهذه الادوية.

الكلمات المفتاحية: مرضى السرطان، ممارسات التخلص، ممارسات التعامل، الأدوية المضادة للسرطان عن طريق الفم، ممارسات التخزين.