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THE ROLE OF THE PHARMACIST IN ONCOLOGICAL PATIENT SAFETY: LITERATURE REVIEW

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ABSTRACT

Currently, neoplastic diseases have become important in the public health scenario in Brazil and in the world, presenting a high incidence rate, but also a good cure rate when patients are diagnosed and treated quickly. Recent studies indicate that 18 million new cases of cancer occurred in the world. Currently, more than one hundred types of drugs are used in oncological care, which differ in their chemical composition, target cells, purpose of use and adverse effects for different types of specific cancers. According to the Federal Council of Pharmacy, pharmaceutical care and assistance are characterized by the actions of a Pharmacist, in which the patient is the main beneficiary, and this professional must be present in all stages of handling and dispensing of chemotherapy provided in Brazil. Given the above, this research was based on literature review studies, in the Scientific Electronic Library Online (SciELO), Academic Google, Pubmed, Virtual Health Library, National Cancer Institute databases, on the importance of the oncologist pharmacist in the safety of the patient and within the multidisciplinary team. The study suggested the paramount importance of the work of the pharmacist in the oncology area and the team, since the patient is in a vulnerable state of health, requiring specific follow-up and care to obtain a safe and effective treatment.

KEYWORDS: Patient safety, Oncology, Pharmacist.

INTRODUCTION

Cancer, which is synonymous with the term neoplasm, is among the diseases that raise concerns due to the risks they pose to the physical and emotional health of human beings. ELIASSON et al., 2012[1] Cancer is the second leading cause of death in the Western world after cardiovascular diseases, being considered a public health problem of national dimensions. ALMEIDA et al., 2006.[2]

The most recent global estimate carried out in 2018, indicates that there were 18 million new cases of cancer in the world. For Brazil, the estimate for each year of the triennium 2020-2022 indicates that there will be 625,000 new cases of cancer. HOLLE et al., 2020.[3]

Antineoplastic chemotherapy is one of the most used therapies in cancer treatment, and it can be used alone or in combination with other treatment modalities. RIBEIRO et al, 2015.[4]

Chemotherapeutic agents used in cancer treatment are considered "high-risk" drugs, most likely to harm the patient when involved in an error.

In 1999 the Institute of Medicine (IOM) published the report: To Err is Human, stating that annually, health errors cause thousands of preventable deaths in the United States, resulting in a great impact on the population and the scientific environment. LEAPE et al., 2008.[5]

According to the International Classification for Patient Safety (ICPS), RIBEIRO et al., 2015,[4] created by the World Health Organization (WHO), to ensure patient safety, it is essential to reduce the risk of unnecessary harm associated with health care to an acceptable minimum.

According to the Federal Council of Pharmacy, pharmaceutical care is characterized by actions of the pharmacist, in which the patient is the main beneficiary. CFF 2021.[6]

Associated with this, in recent decades, the subject of Patient Safety has opened up important spaces for discussions on the global and local scene, and the pharmacist is co-responsible for the safety and effectiveness of pharmacotherapy, through the identification, resolution and prevention of drug-related problems. This research aims at a literary review across health databases in order to describe the importance of the role of the oncologist pharmacist in patient safety, within the multidisciplinary team.

METHODS

This is a literature review study that aims to analyze current and relevant research with a view to synthesising studies related to the role of studies related to the role of the oncologist pharmacist in cancer patient safety.

To prepare the review, the following steps were taken: theme identification, related literature search, search for key words in databases, categorization of studies, evaluation of studies included in the literature review, interpretation of results and synthesis of knowledge presented in the articles analyzed.

The search for articles was carried out from April to May 2021 by consulting the databases, VHL (Virtual Health Library), - Pubmed, Academic Google (Scholar Google), INCA (National Cancer Institute), using the following descriptors patient safety and oncology and pharmacist. Criteria for inclusion were: publications in Portuguese, English and Spanish available in full text, free of charge, in the aforementioned databases from 2017 to 2021, that addressed the role of the pharmacist in cancer patient safety. Articles that did not address the proposed theme were excluded from the research.

RESULTS AND DISCOURSE

The possibility of failures in the process of practical oncology care can pose serious risks to patient safety. Various strategies are used to manage these risks. Among them, a study carried out in a pediatric hospital with a multidisciplinary team identified that reported failures are often associated with interdependencies in chemotherapy regimens administered over months or years. Various strategies are used to manage these risks. For example, computerized order entry systems that are usually implemented with the aim of improving drug safety within oncology. The study concluded that computerized order-entry systems can aid risk management strategies toward safer care models and protocol-based care. LICHTNER et al., 2020.[7]

The study conducted at the University of North Carolina Medical Center created a privileged process for Certified Oncology Pharmacists designated Limited Oncology Practice Provider (LOP) which gives them the right to modify chemotherapy orders and to request care support medication. The study showed that most professionals considered the process favorable for cancer practice and the modification of chemotherapy requests more efficient. Pharmacists also reported the agility in the chemotherapy process and the feeling of notoriety. The study

concluded that the inclusion of a focused privilege process ensures the safety of the cancer care provided and creates a simplified process for chemotherapy modifications and supportive care. CARRASQUILLO et al., 2020.[8]

The National Oncology Distribution Association (NCODA) conducted a review of evidence-based interventions to improve cancer treatment results for patients who are receiving oral anticancers and supportive medications in an outpatient setting. Regarding the activities performed by the pharmacist, the association cited double checking of patient information, review of treatment data, prescription analysis, drug interactions, toxicity assessment, among others. These interventions resulted in significant improvements in the quality of care, patient safety and adherence to treatment. DILLMON et al., 2019.[9]

Reff's study et el., 2020[10] on Chronic Myeloid Leukemia showed that the involvement of pharmacists is essential to ensure successful treatment of cancer patients, seeing they help in patient management and clinical decision-making by assisting in treatment selection, identification and management of adverse events, monitoring of drug interactions, patient education, medication adherence and cost-effectiveness.

Drug-related problems are common in patients with cancer pain and poor pain control, mainly caused by inadequate selection and dosage of analgesics. A study carried out at a university hospital in China sought to encourage pharmacists that their clinical interventions helped dramatically improve problems related to cancer pain control and had positive effects on pain pharmacotherapy. SU et al., 2021.[11]

The role of the oncology pharmacist for cancer patients is fundamental, given the complexities related to the cost, tolerability and safety of oral oncolytic drugs, access issues, and the monitoring and follow-up of patients receiving this therapy. The Hematological/Oncology Pharmacy Association (HOPA) sought to present a standard of pharmaceutical practice in the administration of oral oncolytic therapy, and divided the pharmacist's performance into the following primary areas: prescription, education, dispensing and distribution, and monitoring and follow-up. It also identified several opportunities for pharmacists to improve care for cancer patients receiving oral oncolytics through collaboration with cancer care team members. MACKLER et al., 2018.[12]

Another study sought to assess whether pharmacist supervision during cancer treatment has an impact on patient satisfaction and on adverse drug reactions caused by the drugs used in the treatment, and make health professionals and patients aware of the importance of reporting adverse drug reactions in accordance with Pharmacovigilance. It concluded that the increase in information about adverse drug reactions and the pharmacist's monitoring of the patient has improved, contributing to patient satisfaction and reduced self-regulation or autonomous suspension of medications and, consequently, fewer adverse effects. FORNASIER et al., 2018.[13]

A study conducted in a hematology day hospital ward evaluated the impact of a pharmaceutical care program on the efficacy and safety of the anticancer drug Ibrutinib. The study was conducted by clinical pharmacists specializing in oncology and included patient education in toxicities management, monitoring of adherence, interventions to reduce drug interactions, and monitoring the patient's transition from hospital to community. It showed that a personalized pharmaceutical assistance program can offer a controlled environment of risks associated with oral anticancer agents. It also showed that management of Ibrutinib treatment by clinical pharmacists results in significant improvement in survival and better tolerance than usual care. ZERBIT et al., 2020.[14]

Medication reconciliation is a complex process that affects patients seen at different levels of health care, and its ultimate objective is to increase the safety of medication use and reduce avoidable medication errors. A randomized, prospective and controlled study was carried out to identify the proportion of patients with at least one reconciliation error. Medication reconciliation applied to cancer patients undergoing treatment, compared to standardized practises, produced a notable decrease in the incidence of reconciliation errors that affected the patient. VEGA et al., 2016.[15]

The project, carried out at a cancer medical center in Pennsylvania, sought to examine the process of prescribing oral chemotherapy in order to improve its safety. It identified that oral chemotherapy carries many of the same risks as intravenous chemotherapy and should be prescribed and reviewed with the same supervision. The institution demonstrated the role of the oncology pharmacist in the review of oral chemotherapy, which led to significant interventions in one third of requests. SHAH et al., 2016.[16]

Another study carried out in geriatric and oncology wards sought to compare the rates of errors in prescriptions, and identified that there is a high incidence of errors in prescriptions in the admission of hospitalized patients, regardless of their origin. The study also suggests that health units (emergencies or wards) can be equally benefited by a medication reconciliation program, carried out by the pharmacy services, which has been shown to be an effective measure in the detection and reduction of adverse events in hospitalized patients and, therefore, in the reduction of errors, since the origin of errors can be traced to deficiencies in the communication of the patients' treatment and in the lack of unified and usual accessible supports for reliable medication consultation. GOMÉZ-MARTINO et al., 2017.[17]

Cleveland clinical pharmacists analyzed interventions made by pharmacists in relation to hematology/oncology drugs in relation to improvements in patient safety as well as avoidable costs to the health system, and found that the pharmacist's access to information such as laboratory test results in an electronic system, for example, increased pharmaceutical interventions which led to more timely and higher quality care, with greater safety for the patient and significant savings in costs. LANKFORD et al., 2021.[18]

The Safety of Intravenous Compositions, held in Canada, has recently attracted attention as a result of high-profile incidents, safety community awareness efforts, and increasingly stringent standards of practice. It is the result an observational survey conducted in 2014 that described three types of unrecognized and potentially catastrophic latent chemotherapy preparation errors in Canadian cancer pharmacies. Eleven latent errors in the composition of chemotherapy were identified, which create the possibility of a patient receiving the wrong drug or dose, which, in the context of cancer treatment, can lead to death or permanent loss of function. It also saw a significant degree of risk of serious error in the practice of manual mixing. GILBERT et al., 2018.[19]

The Committee of the Hematological/Oncological Pharmacies Association (HOPA) has organized a working group of oncology pharmacists to examine the safety and value of dose rounding of biological and cytotoxic anticancer agents. The current literature describing dose rounding methods, with clinical or economic data, was analyzed. Relevant pharmacokinetic characteristics and product formulation aspects were considered. Issues for institutional application were addressed. It found that dose rounding reduces waste and healthcare costs.

HOPA recommends that each institution develop its own dose rounding policy that addresses biological and cytotoxic agents. FAHRENBRUCH et al., 2018.[20]

According to a study carried out by the El Cruce Hospital pharmacy service in 2018, the centralization of the cytotoxic preparation process reduces the risk of exposure and offers protection to the product, patient, operator and environment. At the same time, it reduces costs, generating significant savings if protocol and prescription scheduling, preparation in the pharmacy service, and day-hospital administration are coordinated, grouping patients by treatment. It reported that the coordination of planning, preparation and administration meant savings, which directly impacted the patient's accessibility to the medication. RUIZ et al., 2018.[21]

The study presented by Marcath et al. 2018[22] sought to determine the prevalence of drug interactions in individuals enrolled in oncology clinical trials. Drug interactions were assessed based on study protocol recommendations for concomitant drug use (ie: exclude, avoid, or use with caution), screening using the drug interaction tool, and pharmaceutical review. The study identified that there is a high prevalence of drug interactions present in cancer clinical trials, and suggested that stronger efforts be made to improve methods of detecting and managing drug interactions in patients to ensure patient safety and the validity of trial data.

Pharmacy's editorial published in 2020 described numerous expanding roles of Oncology Pharmacists in oncology and related fields. Among them, oncology practice management, in which pharmacists oversee and are often involved in the process of delivering safe and effective care, managing fiscal and personnel resources, developing policies and procedures, and creating strategic quality initiatives, as well as developing clinical responsibilities in some institutions. Oncology Pharmacists may be linked to various areas associated with oncology such as academia, medical communications, population health management, information technology, companies associated with the provision of health benefits or pharmacy, manufacturers, wholesalers and regulatory agencies. HOLLE et al. 2020.[23]

Biosimilars are authorized copies of biopharmaceuticals, developed after the expiration of patents on the reference products. In Brazil, they represent an important strategy for the sustainability of health systems, as they allowed surplus resources to be allocated to other priorities. CFF et al.[24]

The International Society of Oncology Pharmacy Practitioners has positioned itself positively to assist in distributing information and resources to influence and drive the implementation of biosimilars. One of the concerns is related to the use of biosimilars and patient safety. Research presented results of a pharmacovigilance audit conducted by The Christie Hospital in the United Kingdom to document the rates of adverse drug reactions (ADRs) of a Trastuzumab biosimilar during the first six months of the biosimilar's implementation. Of the 1,000 doses of Trastuzumab administered over six months, a total of 25 ADRs were documented, of which only eight were associated with the biosimilar of Trastuzumab. TAN et al. 2020.[25]

Given the current difficulties faced by the health system during the Covid 19 pandemic, adaptations were needed in the work process of oncology pharmacies. A globally collaborative study sought to understand how this impacted access to and delivery of cancer therapies as well as patient safety. Some countries reported that the pharmacist's activities changed or expanded in purpose, including redistribution to areas foreign to usual practice due to the need for work or training at short notice. The study also showed that there are opportunities for continuity and expansion of digital services in the post-pandemic, but that it is important to consider safe workloads, as well as secure remote dispensing, considering the narrow therapeutic window, temperature control, clinical trials, drugs supplemental to anti-cancer treatments and patient supportive care in compliance with regulatory standards, drug integrity and patient safety. ALEXANDER et al. 2020.[26]

Given the relevance of this topic, it is expected that further studies will be carried out related to the role of the oncologist pharmacist in patient safety.

Competing interests

All the authors declare that they do not have any competing interest which can interfere in their judgment of analysis and interpretation of results of this study.

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