



Original Research Article

Cancer Patients with Diabetes

Article History:

Name of Author:

Batoul Barari Tajani^{*1}, E Maheswari¹,
Vinayak V Maka² and Anjana S Nair³

Affiliation: ¹Department of Pharmacy
Practice, Faculty of Pharmacy, M.S.
Ramaiah University of Applied Sciences,
Bengaluru, Karnataka, India

²Department of Medical Oncology, M.S.
Ramaiah Medical College Hospital,
Bengaluru, Karnataka, India

³Department of Community Medicine, M.S.
Ramaiah Medical College, Bengaluru,
Karnataka, India.

Corresponding Author:

Batoul Barari Tajani

Received: 29-11-2025

Revised: 10-12-2025

Accepted: 20-01-2026

Published: 05-02-2026

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Noncommercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Abstract: Recent studies in cancer management have highlighted the critical role of a multidisciplinary team approach in optimizing patient care and addressing the various comorbidities, toxicities, and complications that may arise during treatment. The concurrent presence of diabetes and cancer poses a significant challenge for healthcare professionals globally. Effective management of these conditions necessitates a holistic approach to enhance patients' overall health, treatment outcomes, and quality of life, while preventing diabetes-related complications and cancer treatment side effects.

Keywords: Toxicities; Polypharmacy; Diabetes; Oncology; Palliative care.

INTRODUCTION

Patients undergoing palliative oncology care experience a variety of symptoms resulting from both antitumor therapies and the tumour itself. Furthermore, their condition may be exacerbated by comorbidities such as hypertension, diabetes, cardiovascular disease, hepatic or renal dysfunction, and psychosomatic disorders. A crucial aspect in this setting is the precise prescription of symptomatic and supportive treatments. Thus, the clinical pharmacist plays an essential role in anticipating and mitigating the risks associated with adverse drug reactions, polypharmacy, and patient adherence [1]...

The management of oncological diseases requires a multidisciplinary approach due to their inherent complexity. Within the treatment continuum, there is a phase with curative intent, which may be limited by the restricted availability of effective antitumor therapies, necessitating their discontinuation. The aim

of palliative care in oncology is to preserve the highest possible quality of life for patients, primarily by slowing tumour progression and alleviating associated symptoms. The transition from curative to palliative oncological treatment is influenced by numerous factors, some of which extend beyond the healthcare sector, including social care. Addressing the challenges associated with this transition is achievable only through a multidisciplinary approach [2-3].

Cancer and diabetes mellitus (DM) represent two of the most prevalent and significant global health challenges, with their incidence and prevalence having substantially increased over the past decade. A diagnosis of either cancer or DM can profoundly impact an individual's life; furthermore, their concurrent presence can markedly affect quality of life (QoL), patient care, and survival outcomes [4].

It is estimated that a substantial proportion of

oncology patients, ranging from 8% to 18%, also experience DM. Several studies have elucidated a complex relationship between DM and cancer. Recently, in addition to the common pathogenetic mechanisms typically proposed to explain this relationship (e.g., hyperinsulinemia, hyperglycaemia, chronic inflammation, pharmacological treatments, surgical outcomes), novel biological mechanisms, such as the dysregulation of microRNAs involved in pathways pertinent to the pathogenesis of both DM and cancer, have been suggested as potentially responsible for the close correlation between these two pathological conditions [5-7].

Further research is required to elucidate the biological connections between these two diseases, with the aim of developing more effective therapeutic strategies and improving management. Although the precise relationship between these diseases is not yet fully understood, individuals with DM are at an increased risk for various types of cancer. Epidemiological evidence suggests an elevated risk of cancer in individuals with DM, including pancreatic, liver, colorectal, breast, and bladder cancer [8]. Therefore, it is crucial to emphasize primary prevention and the adoption of healthy lifestyle habits, particularly regular exercise, a nutritious diet, and smoking cessation, to reduce the risk of developing DM and cancer.

Clinical studies underscore the critical role of clinical pharmacists within the palliative care team, as they frequently contribute to significantly reducing the risks associated with polypharmacy and non-compliance. The personalized approach and methodology employed in this research facilitated the enhancement of palliative oncology care in a targeted manner, thereby providing an appropriate level of intervention for each ambulatory patient. Ultimately, this approach resulted in a markedly improved quality of life and cost-effectiveness.

The Collaborative Role of Diabetologists and Oncologists in the Management of Cancer Patients with Diabetes

Supportive care medications, including corticosteroids, which are commonly employed in premedication as well as in supportive and palliative care, can adversely affect metabolic regulation in cancer patients. Furthermore, the management of patients with diabetes mellitus (DM) may be neglected due to the propensity of both patients and healthcare providers to prioritize cancer treatment. Consequently, these patients face an elevated risk of experiencing suboptimal outcomes [9].

Effective management of diabetes in cancer patients necessitates a comprehensive and collaborative approach. The collaboration and interaction between oncologists and diabetologists are essential for

achieving optimal care levels and minimizing the risk of complications. collaboration ensures that patients receive the highest quality of care. Successful teamwork involves communication, coordination, and cooperation, requiring a shared understanding of the patient's needs, goals, and preferences, as well as a willingness to collaborate in developing a personalized treatment plan that addresses each patient's unique requirements and objectives. Such collaboration can also enhance patient outcomes, prevent errors, and reduce costs. Furthermore, interaction with patients and their families is vital for delivering high-quality cancer care, improving outcomes, and enhancing the overall patient experience [10].

Recent advancements in diabeto-oncology [11] underscore the imperative for developing personalized treatment plans for cancer patients with diabetes mellitus (DM). This encompasses the identification of biomarkers capable of predicting cancer risk and prognosis in diabetic individuals, alongside the implementation of primary prevention strategies. The co-management of cancer and DM requires collaboration among various healthcare professionals, including endocrinologists and oncologists, and the establishment of dedicated specialists in this field. Diabeto-oncology offers a comprehensive approach to cancer patient management by considering glucose control and the presence of long-term diabetic complications. This coordinated approach not only facilitates the creation of personalized treatment plans but also addresses the unique challenges and needs of these patients.

The Significance of Diabetes Screening Prior to Initiating Anticancer Therapy and the Implementation of Proactive Strategies for Managing Iatrogenic Hyperglycaemia

Individuals with a prior diagnosis of diabetes mellitus (DM) should be scheduled for a consultation at a DM care clinic prior to initiating oncological treatments. This consultation is essential for evaluating the presence of diabetic complications that may influence the selection of anticancer therapy. Additionally, it is imperative to assess the patient's current nutritional status and requirements, overall metabolic control, and the potential necessity for proactive adjustments to existing glucose-lowering therapy [12,13].

Contrary to common assumptions, a substantial proportion of patients with normal glucose regulation may develop new-onset diabetes mellitus (DM) or metabolic disorders, such as dyslipidaemia, hyperuricemia, and hypertension, as a result of cancer therapies or supportive medications. It is crucial not only to understand the current status of a patient with DM and cancer but also to anticipate their future condition. This necessitates a comprehensive evaluation of expected changes in glucose control and

clinical status to proactively adjust antidiabetic therapy. For instance, it is vital to avoid antidiabetic drugs (ADDs) that have specific contraindications and potential adverse events (AEs) [14,15].

Effect of Drugs in Glucose Metabolism in terms of oncology patients

Glucocorticoids are widely recognized for their capacity to induce hyperglycaemia or exacerbate existing diabetes mellitus (DM) conditions when administered therapeutically [16,17].

The impact of glucocorticoids on glucose metabolism is contingent upon the dosage administered. While glucocorticoids cause a modest elevation in fasting blood glucose levels, they markedly increase postprandial blood glucose levels in individuals both with and without pre-existing diabetes mellitus (DM), with the most significant effects occurring in the afternoon and evening. Additionally, a reduction in sensitivity to exogenous insulin is frequently observed. The hyperglycaemia induced by glucocorticoids can be attributed to enhanced hepatic glucose production, inhibited glucose uptake in adipose tissue and skeletal muscle, and diminished insulin secretion by β -cells [18-20].

Patients diagnosed with both diabetes mellitus (DM) and cancer who are receiving chemotherapy are at an elevated risk of encountering glycaemic complications. It is estimated that approximately 10%-30% of cancer patients undergoing chemotherapy may experience hyperglycaemia. Although this condition is generally transient during the course of treatment, it has the potential to evolve into a long-term concern. Several chemotherapeutic agents have been identified as inducing hyperglycaemia, even in patients without DM. Notably, cisplatin, 5-fluorouracil, and chemoradiation have been associated with the onset of hyperglycaemia [21,22].

Platinum-based compounds and taxanes, commonly employed in the treatment of various malignancies, are known for their potential to induce peripheral neuropathy. Individuals with diabetes mellitus (DM) are particularly susceptible to neuropathy as an adverse effect of chemotherapy, contingent upon the specific symptoms and pharmacological agents utilized. The severity of neuropathy symptoms may intensify with increased doses of chemotherapy. Diabetic patients may experience extended neuropathy following chemotherapy, with symptoms potentially persisting for up to two years post-treatment [23].

A meta-analysis was conducted to evaluate the impact of diabetes mellitus (DM) on the clinical outcomes of patients with pancreatic cancer undergoing adjuvant chemotherapy. The findings indicated that patients

with DM receiving chemotherapy for pancreatic cancer exhibited reduced survival rates and presented with larger tumour sizes. Furthermore, pancreatic cancer patients with DM faced an increased risk of mortality following chemotherapy [24].

Patients' Knowledge and their Participation Role from the Medical Oncologist Perspective

Throughout our research, we implemented a survey to gather insights from Medical Oncologists concerning their views on deprescribing and drug precision in oncology patients. We would like to share with you a selection of questions from our questionnaire which is related to cancer patients' participation and knowledge in their treatment.

We received 51 responses through meeting and google form; among the questionnaire we had questions which are patient related such as:

The survey findings reveal that 44 (86.3%) agree that deprescribing is a form of patient-centered care. Oncologists 46 (90.2%) opined that patients administer prescribed medications with willingness.

Our findings underscored the necessity of patient counselling, as well as the patient's willingness and preparedness to engage in the deprescribing process. It also suggests that post-deprescribing monitoring and follow-up are critical in identifying whether the deprescribing was effective and had an influence on the patient's quality of life, management, or outcome. We enrolled 302 patients in the Department of Medical Oncology, type 2 diabetes mellitus 16 (5.3%), 14 (4.6%) patients with type 2 diabetes mellitus and hypertension and 9 (3%), type 2 diabetes mellitus with cardiovascular disorders including deep vein thrombosis and ischemic heart disease [25].

Supportive and Palliative Care

constitute vital elements of the comprehensive care strategy for patients diagnosed with diabetes mellitus (DM) and cancer. The management of these conditions poses considerable challenges, necessitating a diverse array of supportive services. It is crucial for healthcare providers to collaborate in developing a plan that addresses the specific needs associated with both cancer and DM. Supportive care may include education and assistance in blood sugar management, antidiabetic drugs (ADD) management, lifestyle modifications, and access to a multidisciplinary team of healthcare professionals who can provide symptom management, nutritional guidance, and emotional support. Palliative care services are crucial for patients experiencing neuropathy, chronic pain, or symptoms associated with treatment toxicities or cancer progression, such as pain, nausea, or fatigue. The primary objective of supportive and palliative care for individuals with diabetes mellitus (DM) or cancer is to enhance their quality of life (QoL) and provide them with the

necessary resources to manage their symptoms and maintain their functional status. Patients with cancer who also have diabetes mellitus and exhibit poor glycaemic control often experience intensified pain and asthenia. Furthermore, they are more prone to treatment-related toxicities, such as nausea, vomiting, appetite reduction, diarrhoea, and weight loss. These adverse effects can lead to malnutrition and sarcopenia, which are characterized by a loss of skeletal muscle mass and a decline in functional status [26,27].

We have observed that polypharmacy especially in diabetic cancer patients is particularly prevalent in the Medical Oncology Ward, potentially exacerbated by the complexity of anticancer therapies and the progression of the disease. Consequently, ensuring drug precision presents significant challenges, thereby underscoring the critical importance of clinical pharmacy in this context. Our research indicates that medical oncologists are amenable to collaborating with healthcare professionals, such as clinical pharmacists and clinical oncology pharmacists, to improve patient outcomes and management strategies [28].

Acknowledgement

The authors express their deepest gratitude to the Faculty of Pharmacy, M.S. Ramaiah University of Applied Science, all the nursing staff, and resident doctors of M.S. Ramaiah Medical College Hospital for their incredible cooperation.

Author's Contributions

BBT, EM, VVM contributed to the study conception and design, material preparation, data collection. Data analysis was performed by ASN and also reviewed the manuscript for analytic discussion part. VVM performed project administration. BBT contributed writing the manuscript, EM supervised the study and reviewed the manuscript. All authors read and approved the manuscript.

Funding

No funding for the submitted work

Data availability

The data used to support the finding of this study are included within the article

Declarations

Ethics approval and consent to participate

The study was authorized by the Ethics Committee of the M. S. Ramaiah Medical College Hospital (MSRMCH), Bengaluru, Karnataka, India, before to its start in December 2022.

Ethics Committee, MS Ramaiah Medical College Hospital, Bengaluru, Karnataka, India is registered

under DCGI (Drugs Controller General India) and Department of Health Services and works in accordance with the Declaration of Helsinki. Informed consent was obtained from all subjects involved in this study.

Consent for publication

All the authors have consented to this publication.

Competing interest

The authors declare no competing interests.

REFERENCES

1. Novosadova M, Filip S, Molnarova V, et al. *BMJ Supportive & Palliative Care* 2023;13:e1308–e1317.
2. trana T, Jünger S, Ostgathe C, et al. A matter of Definition – key elements identified in a discourse analysis of definitions of palliative care. *Palliat Med* 2008;22:222–32.
3. Hui D, Hannon BL, Zimmermann C, et al. Improving patient and caregiver outcomes in Oncology: team- based, timely, and targeted palliative care. *CA Cancer J Clin* 2018;68:356–76.
4. Shi Y, Hu FB. The global implications of diabetes and cancer. *Lancet*. 2014;383(9933):1947-1948.
5. Gallo M, Clemente G, Cristiano Corsi D, et al. An integrated care pathway for cancer patients with diabetes: a proposal from the Italian experience. *Diabetes Res Clin Pract*. 2020;159:107721.
6. Giovannucci E, Harlan DM, Archer MC, et al. Diabetes and cancer: a consensus report. *Diabetes Care*. 2010;33(7):1674-1685.
7. Natalicchio A, Montagnani M, Gallo M, et al. MiRNA dysregulation underlying common pathways in type 2 diabetes and cancer development: an Italian Association of Medical Oncology (AIOM)/Italian Association of Medical Diabetologists (AMD)/Italian Society of Diabetology (SID)/Italian Society of Endocrinology (SIE)/Italian Society of Pharmacology (SIF) multidisciplinary critical view. *ESMO Open*. 2023;8(3):101573
8. Wang M, Yang Y, Liao Z. Diabetes, and cancer: epidemiological and biological links. *World J Diabetes*. 2020;11(6):227-238.
9. Faggiano A, Mazzilli R, Natalicchio A, et al. Oncological Endocrinology Research Group of the Italian Society of Endocrinology. Corticosteroids in oncology: use, overuse, indications, contraindications. An Italian Association of Medical Oncology (AIOM)/Italian Association of Medical Diabetologists (AMD)/Italian Society of Endocrinology (SIE)/ Italian Society of Pharmacology (SIF) multidisciplinary

- consensus position paper. *Crit Rev Oncol Hematol.* 2022;180:103826.
10. Wang M, Yang Y, Liao Z. Diabetes, and cancer: epidemiological and biological links. *World J Diabetes.* 2020;11(6):227-238.
11. Noto H. Dawn of a new era of diabeto-oncology. *J Diabetes Investig.* 2020;11(4):755-756.
12. Gallo M, Gentile L, Arvat E, Bertetto O, Clemente G. Diabetology and oncology meet in a network model: union is strength. *Acta Diabetol.* 2016;53(4):515-524.
13. Gallo M, Clemente G, Corsi D, et al. on behalf of AMD (the Italian Association of Medical Diabetologists) and AIOM (the Italian Association of Medical Oncology). An integrated care pathway for cancer patients with diabetes: a proposal from the Italian experience. *Diabetes Res Clin Pract.* 2020;159:107721.
14. Vergès B, Walter T, Cariou B. Endocrine side effects of anticancer drugs: effects of anticancer targeted therapies on lipid and glucose metabolism. *Eur J Endocrinol.* 2014;170(2):R43-R55.
15. Gallo M, Muscogiuri G, Felicetti F, et al. Adverse glycaemic effects of cancer therapy: indications for a rational approach to cancer patients with diabetes. *Metabolism.* 2018;78:141-154.
16. Aldea M, Orillard E, Mansi L, et al. How to manage patients with corticosteroids in oncology in the era of immunotherapy? *Eur J Cancer.* 2020;141:239-251.
17. Clore JN, Thurby-Hay L. Glucocorticoid-induced hyperglycemia. *Endocr Pract.* 2009;15(5):469-474.
18. Burt MG, Roberts GW, Aguilar-Loza NR, Frith P, Stranks SN. Continuous monitoring of circadian glycemic patterns in patients receiving prednisolone for COPD. *J Clin Endocrinol Metab.* 2011;96(6):1789-1796.
19. Hirsch IB, Paauw DS. Diabetes management in special situations. *Endocrinol Metab Clin North Am.* 1997;26(3):631-645.
20. Andrews RC, Walker BR. Glucocorticoids and insulin resistance: old hormones, new targets. *Clin Sci (Lond).* 1999;96(5):513-523.
21. Feng JP, Yuan XL, Li M, et al. Secondary diabetes associated with 5-fluorouracil-based chemotherapy regimens in non-diabetic patients with colorectal cancer: results from a single-centre cohort study. *Colorectal Dis.* 2013;15(1):27-33.
22. Nguyen NP, Vos P, Vinh-Hung V, et al. Altered glucose metabolism during chemoradiation for head and neck cancer. *Anticancer Res.* 2009;29(11):4683-4687.
23. Sempere-Bigorra M, Julián-Rochina I, Cauli O. Chemotherapy-induced neuropathy and diabetes: a scoping review. *Curr Oncol.* 2021;28(4): 3124-3138.
24. Ma J, Wang J, Ge L, Long B, Zhang J. The impact of diabetes mellitus on clinical outcomes following chemotherapy for the patients with pancreatic cancer: a meta-analysis. *Acta Diabetol.* 2019;56(10):1103-1111.
25. Tajani BB, Maheswari E, Maka VV, Nair AS. Adverse drug reactions and drug-related problems with supportive care medications among the oncological population. *Discov Oncol.* 2024 Sep 9;15(1):416. doi: 10.1007/s12672-024-01300-w. PMID: 39249610; PMCID: PMC11383904.
26. Bozzetti F. Forcing the vicious circle: sarcopenia increases toxicity, decreases response to chemotherapy and worsens with chemotherapy. *Ann Oncol.* 2017;28(9):2107-2118.
27. Morley JE, Malmstrom TK, Rodriguez-Mañas L, Sinclair AJ. Frailty, sarcopenia and diabetes. *J Am Med Dir Assoc.* 2014;15(12):853-859.
28. BB Tajani, E Maheswari, VV Maka, Anjana S Nair. Evaluation Of the Barriers and Facilitators of Deprescribing in The Department of Medical Oncology. *AJBR [Internet].* 2025 Jul. 30 [cited 2025 Oct. 7];28(3S):876-88. Available from: <https://africanjournalofbiomedicalresearch.com/index.php/AJBR/article/view/8161>