

Measurement of Hyperglycemia and Impact on Health Outcomes in People With Cancer: Challenges and Opportunities

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Problem Identification: Poor health outcomes have been associated with hyperglycemia in patients with and without diabetes. However, the impact of hyperglycemia on the health-related outcomes of patients with cancer has shown conflicting results. The purpose of this review was to explore definitions and measurement issues related to the assessment of hyperglycemia and the subsequent impact on the findings of health-related outcomes in adults with cancer.

Literature Search: Four electronic databases were searched: MEDLINE[®], PubMed, CINAHL[®], and Web of Science. The search terms were *cancer*, *hyperglycemia*, *measurement*, *adults*, and *health-related outcomes*. Only quantitative manuscripts were reviewed. Articles that focused globally on diabetes, hyperglycemia, and/or cancer that did not discuss health-related outcomes were excluded from this review.

Data Evaluation: A total of 30 articles were reviewed. Quantitative articles were synthesized using integrative review strategies.

Synthesis: Three key gaps were identified in the literature: variations in the calculation of hyperglycemia prevalence and in the measurement of hyperglycemia, as well as inconsistent use of standard guidelines.

Conclusions: This review highlights the inconsistencies in measuring or assessing hyperglycemia and the lack of standardized guidelines in treating hyperglycemia. Failure to have a standard approach to the measurement and management of hyperglycemia impedes the ability of healthcare providers to determine the significance of its impact on health outcomes. Further research is needed to establish appropriate measurement guidelines to address hyperglycemia in people with cancer.

Implications for Practice: Evidence-based measurement and treatment guidelines are needed to inform and assist healthcare providers with clinical decision making for people with cancer who experience hyperglycemia.

Hyperglycemia, an elevation in blood glucose, is a major side effect of cancer and its treatment. In patients with cancer, hyperglycemia frequently occurs independent of the diagnosis of diabetes (Farrokhi, Smiley, & Umpierrez, 2011). Among patients with various types of cancer, the prevalence of hyperglycemia ranges from 39%–99% (Hammer et al., 2009; Karnchanasorn, Malamug, Jin, Karanes, & Chiu, 2012; Storey & Von Ah, 2015).

Among critically and noncritically ill patients, hyperglycemia has been associated with infection and sepsis, stroke, hemorrhage, ileus, and venous thromboembolism (Jiménez-Ibáñez, Castillejos-López, Hernández, Gorocica, & Alvarado-Vásquez, 2012; Mraovic et al., 2010; Zuurbier et al., 2016); longer hospital length of stay (Masrur et al., 2015); and increased morbidity and mortality (Egi et al., 2008; Hermanides et al., 2010). Harmful consequences of hyperglycemia