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EFFECTS OF BLUE ENRICHED LIGHT ON METABOLISM: A SCOPING REVIEW

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ABSTRACT

Purpose: This study seeks to review published research on the effect of blue enriched light on metabolism, with a specific focus on the available published estimates of various changes in glucose level as well as the effects of blue enriched light on the metabolism.

Methods: A scoping review was conducted of the published literature on the effects of blue enriched light on metabolism, with emphasis on efficacy. In three databases search was conducted using both blue enriched light and changes in metabolism as keywords. This review was limited to studies with a primary aim of determining the changes in the metabolism due to the effect of blue enriched lights. Only conditions considered to signify the changes in glucose metabolism were included, not the changes in overall metabolism.

Results: A total of 153 titles and abstract were found by searching in three different databases. Additionally, 24 articles were found from the reference of the reviewed article. Mendeley citation manager was used for abstract, title screening, removal of duplicates and citation. After eliminating 111 duplicates, we reviewed 42 titles for eligibility. We excluded 28 of these records. 14 full text articles were screened for eligibility. After reading the full texts, 13 of the studies were not analyzed due to failing to meet the inclusion criteria. Finally, one article was included for the qualitative synthesis as its primary outcome was to find the changes in glucose metabolism.

Conclusion: The results from the review significantly demonstrated that acute exposure of blue-enriched light in the morning and the evening impacts blood sugar level in healthy adults and increased insulin resistance compared with dim light exposure both in morning and evening. In the evening, bright light also caused higher peak glucose levels. Over time, excess blood glucose can result in increased body fat, weight gain and a higher risk for diabetes.

Keywords: Light, Blue enriched light, Metabolism, Light Emitting Diode, Circadian Rhythm, Metabolic functions.

