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THE EFFECTS OF BLUE LIGHT EXPOSURE ON CEREBRAL CORTEX: A SCOPING REVIEW

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ABSTRACT

PURPOSE: This study intends to review published research on the effects of blue light exposure on cerebral cortex in a systematic view and to provide a descriptive overview of the reviewed material.

METHODS: A scoping review was performed of the published literature on the effects of blue light exposure on cerebral cortex; in accordance with the PRISMA-ScR checklist. Four electronic bibliographic databases (PubMed, Cochrane Library, Science Direct, and Scopus) were searched using specific keywords. Relevant articles published within past ten years were identified. The review undertook three stages of screening i) title screening, ii) abstract screening, and iii) full-text screening. The data was extracted from the retrieved full text. The results are tabulated and summarized descriptively.

RESULT: A total of 319 literatures were identified after literature search of which 9 were selected for data extraction, after screening. All the studies included in this review showed that blue light exposure enhances brain activation, efficiency, performance and responses in different areas of cerebral cortex, especially in PFC, VC, parietal cortex and TPN; causing beneficial effects on cognition, memory, alertness and mood etc. Blue light also increases O_2Hb and decreases HHb in PFC and VC.

The effects of blue light at various exposure durations, the durability of those effects, the underlying mechanisms of these effects, their applicability in natural settings and how they vary with individual parameters and in clinical populations etc. are yet to be explored.

CONCLUSION: Blue light varyingly affects functioning of different parts of cerebral cortex, and consequently causes many beneficial effects in human psychophysiology. There are many areas on the effects of blue light exposure on brain yet to be researched.