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PREVENTIVE HEALTH IN A CHANGING WORLD

MYOPIA AND OUTDOOR LIGHT PATTERNS IN 7-YEAR-OLD SINGAPOREAN CHILDREN IN GUSTO

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Background

Outdoor bright light exposure has been identified as one of the protective factors against myopia. This study aims to examine ambient outdoor light exposure and its patterns in Singaporean children from the GUSTO birth cohort aged 7-years-old.

Methods

Objective light measurements were collected over a 1-week period by a wrist-worn watch (FitSight) which the children wore at the 7-year follow-up visit. Measurements were recorded every 1 minute, 12 hours per day (h/d). Mean(\pm SD) daily light intensity (lux) and time spent (min) outdoors (\geq 1000 lux) were compared between weekdays and weekends, school term vs school holidays and between gender and ethnicity groups.

Results

Among the 301 children the majority was female (55%) and Chinese (65%). Children spent less than 1 h/d outdoors, with a significantly longer duration on weekends (43 ± 35 min) than weekdays (34 ± 25 min); $p < 0.001$. Daily light intensity was significantly higher during weekends (546 ± 594 lux) than weekdays (424 ± 272 lux); $p < 0.001$, and during school holidays (510 ± 443) versus school term (428 ± 232 lux); $p = 0.01$. Light exposure was not significantly different between males (490 ± 287 lux) and females (432 ± 252 lux); $p = 0.06$. Indians (555 ± 399 lux) had higher light exposures than Chinese (421 ± 175 lux) and Malays (503 ± 365 lux); $p = 0.003$.

Conclusion

Singaporean children spend less than one hour per day outdoors, with lesser time spent during weekdays and school term. Interventions to increase daily light exposure and prevent childhood myopia should be implemented. Schools can potentially play an important role in myopia prevention by promoting outdoor activities during recess or lunch break, or outdoor curriculum activities.