Study on light exposure and kids' weight

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Credit: Robert Kraft/public domain

A world-first QUT study revealing light exposure plays a role in the weight of preschool children has been published by international research journal *PLOS ONE*.

PhD student Cassandra Pattinson and colleagues Simon Smith, Alicia Allan, Sally Staton and Karen Thorpe studied children aged three to five,

from six Brisbane childcare centres. At time 1, they measured children's sleep, activity and light exposure for a two week period, along with height and weight to calculate their BMI, then followed up 12-months later

"At time 1, we found moderate intensity light exposure earlier in the day was associated with increased body mass index (BMI) while children who received their biggest dose of light – outdoors and indoors – in the afternoon were slimmer," said Ms Pattinson of the Environmental Light Exposure is Associated with Increased Body Mass in Children study.

"At follow-up, children who had more total light exposure at Time 1 had higher body mass 12 months later. Light had a significant impact on weight even after we accounted for Time 1 body weight, sleep, and activity.

"Around 42 million children around the globe under the age of five are classified as overweight or obese so this is a significant breakthrough and a world-first.

"Artificial lighting, including light given off by tablets, mobile phones, night lights, and television, means modern children are exposed to more environmental light than any previous generation. This increase in light exposure has paralleled global increases in obesity."

The research team is from QUT's Institute of Health and Biomedical Innovation and the Centre for Children's Health Research

Ms Pattinson said it is known the timing, intensity and duration of exposure to both artificial and natural light have acute biological effects in mammals.

"The circadian clock – also known as the internal body clock – is largely

driven by our exposure to light and the timing of when that happens. It impacts on sleep patterns, weight gain or loss, hormonal changes and our mood," Ms Pattinson said

"Factors that impact on obesity include calorie intake, decreased physical activity, short sleep duration, and variable sleep timing. Now light can be added to the mix."

Ms Pattinson said the next step was to figure out how the research can be used in the fight against obesity in children.

"We plan to conduct further studies with pre-schoolers and also infants," she said.

"Animal studies have shown that timing and intensity of light exposure is critical for metabolic functioning and weight status. Our findings suggest that the same applies to us.

"This research suggests that exposure to different types of light (both artificial and natural) at different times now needs to be part of the conversation about the weight of children."

More information: Cassandra L. Pattinson et al. Environmental Light Exposure Is Associated with Increased Body Mass in Children, *PLOS ONE* (2016). DOI: 10.1371/journal.pone.0143578

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