IMPACT OF COVID-19 ON SLEEP IN PRESCHOOL CHILDREN IN HONG KONG

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Background and Aims
In Hong Kong, schools have been suspended in most extracurricular activities have been restricted during the Coronavirus disease 2019 (COVID-19) period with implementation of social distancing interventions starting from late January 2020. Studies investigating the effects of school suspension and social distancing on sleep of preschool children are limited. We conducted an online survey on a previously established cohort of children to evaluate the impact of COVID-19 on their sleep patterns, and to investigate the contributions of physical activity and screen time on the changes.

Methods
Prospective cohort study was performed. Children who previously participated in a preschool sleep education project before COVID-19 pandemic were invited to join this study. Data was collected through an online questionnaire, which included children’s demographic data, children and parents’ sleep patterns, children’s physical activities and screen time during COVID-19 pandemic. The data was then compared with previously obtained information from the same child. Linear mixed model was used to evaluate the differences between pre- and post-COVID-19 visits while adjusted for age, sex, parental sleep patterns, nap duration, screen time and outdoor activities.

Results
The mean age of children upon enrollment was 4.32 years old, ranging from 2.15 years old to 7.28 years old. There were 365 boys (56.9%) and 277 girls (43.1%). Compared with pre-COVID condition, children showed delayed bedtime by 10.1 minutes during weekday and 9.8 minutes during weekend. There was also 24.4 minutes delay in wake time during weekday and 11.7 minutes delay during weekend. There was increased in nocturnal sleep duration by about 18 minutes during weekday when compared to pre-COVID-19. (Table 1)

Mother’s bedtime and wake time delayed child’s bedtime and wake time during weekday with similar findings in mother’s weekend sleep pattern and father’s and mother’s sleep patterns. Screen time with television and electronic devices delayed their bedtime and resulted in wake time during weekday. And more importantly, screen time shortened their sleep duration during weekday with similar results in weekend sleep parameters. (Table 1 & 2)

Discussion
School closure and public health policy had affected preschool children’s sleep pattern with delay in sleep time and increased in sleep duration by 18 minutes. Screen time with television or electronic devices was associated with delayed bedtime and shortened sleep duration by a small but significant effect. Use of television and electronic devices has negative impact on sleep including sleep onset delay, sleep anxiety, increase bedtime resistance, decrease in sleep duration and increase in daytime sleepiness.1-3 Apart from screen time, parent’s sleep patterns also affected children’s sleep pattern in this study, similar findings as J Zhang et al study in Hong Kong children in 2010.5

Before the pandemic, preschool children in Hong Kong had 9-10 hours of total sleep duration, which was shorter than recommended sleep duration of 10 to 13 hours by the American Academy of Sleep Medicine.6 During COVID-19 pandemic, children spent more time at home due to school closure and social distancing. However, despite given the opportunity to catch up with sleep, children were not sleeping a lot longer than pre-COVID period. Increase in screen time played a role but parents sleep pattern was also an important factor. Short sleep duration was associated with obesity5,6, poorer academic performance7 and behavioral problems8. Health education to parents is required on control of screen time in children and also to promote good sleep hygiene in the family.

Bibliography