

PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	What Factors Are Associated with Early Childhood Development in Thailand? A Cross-Sectional Analysis Using the 2022 Multiple Indicator Cluster Survey
AUTHORS	Topothai, Thitikorn; Phisanbut, Napat; Topothai, Chompoonut; Suphanchaimat, Rapeepong; Müller-Riemenschneider, Falk; Cetthakrikul, Nisachol; Tangcharoensathien, Viroj

VERSION 1 - REVIEW

REVIEWER NAME	<i>Rachel Mary Hilliam</i>
REVIEWER AFFILIATION	The Open University, Mathematics and Statistics
REVIEWER CONFLICT OF INTEREST	
DATE REVIEW RETURNED	31-Aug-2024

GENERAL COMMENTS	<p>This paper will be of interest to the readers of the journal. It is well written and the statistical techniques are appropriate.</p> <p>On question is regarding the screen time result. In particular the authors should draw awareness to the fact that for screen time duration of 2 hours the CI (0.84, 1.91) hence there is no evidence that 2 hours of screen time is associated with being developmentally on track. Where are the confidence intervals for 1 hour and <= hours have a lower limit above 1. This should be explored or at least noted in more detail.</p>
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REVIEWER NAME	<i>Chitra Parab</i>
REVIEWER AFFILIATION	Sydney LHD, NSW health, Dept of Community Pediatrics
REVIEWER CONFLICT OF INTEREST	
DATE REVIEW RETURNED	29-Sep-2024

GENERAL COMMENTS	<p>This is a good quality population-based study with excellent write-up by study authors. Please find herewith summary points with few suggestions for minor review of the manuscript.</p> <p>This article outlines cross-sectional analysis of population-based survey in Thailand. The aim of this study is clearly outlined by authors as</p> <ul style="list-style-type: none">• Examining the proportion of children aged 24 – 59 months of age who are developmentally on track and• Association with household socio-economic factors and environments.
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	<p>Study methods have been outlined clearly; inclusive of study sample and measurement processes, ethics approval and consent. Statistical methods are well explained with clear data being available in table formats.</p> <p>Study results are discussed comprehensively in discussion section outlining strengths as well as limitations of the study. The results showed positive association for children with development on track against households with high maternal education and access to increased number of books (> 3). There was also surprising association between increased screentime. This study supports for nationwide policies to support evidence-based parenting interventions and access to quality developmental resources such as books.</p> <p>Suggestions for authors:</p> <ul style="list-style-type: none"> • An additional line outlining details/ background of Multiple Indicator Cluster Surveys (MICS) would help reader's understanding of this tool. (Page 4, in Background section, para 3 – line 6). For example, MICS is a survey tool which is used on annual basis to gather nationwide population-based data. • Sample and procedure – The strength of data will improve if additional line is included at the end of 1st paragraph on page 5 explaining reasoning for including 7212 children out of 10,502 mothers interviewed (i.e. almost 1/3rd of survey participants not included in the study analysis). • Table 2 – data is analysed for 5972 children out of 7212 study participants. On page 7, paragraph 1 mentions that these numbers are based upon complete information being available. It is worth commenting in discussion section regarding this attrition in number of study participants and if any impacts on the strength of study results.
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Our response:

Thank you for your helpful comment. In response, we have re-categorized screen time duration based on the World Health Organization's guidelines, which recommend limiting screen time for children under 5 years to no more than 1 hour per day. We also found that the mean and median screen time in our study was 1 hour per day. As such, we categorized screen time into two groups: no screen time and 1 or more hours per day.

This new categorization simplifies the analysis and removes any confusion regarding the 2-hour category. The results remain consistent with our initial findings, showing that using screen devices for at least one hour per day is significantly associated with being developmentally on track (AOR = 1.68, 95% CI = 1.30–2.18). This streamlined approach aligns better with public health guidelines and provides clearer insights for the reader.

We have updated the manuscript to reflect this revised categorization.

Findings section (clean file, page 7, lines 226-228):

“Being a girl (AOR = 1.49, 95% CI = 1.17, 1.91), having mothers with higher education levels (AOR = 2.02, 95% CI = 1.23, 3.31 for above secondary education), having more books at home (AOR = 1.59, 95% CI = 1.17, 2.16 for 3-9 books; AOR = 2.40, 95% CI = 1.49, 3.86 for at least 10 books), and using screen devices for at least one hour per day (AOR = 1.68, 95% CI = 1.30, 2.18) were all significantly associated with a higher likelihood of being developmentally on track.”

Discussion section (page 9, lines 285-294):

We maintain the original content of the discussion but add an additional explanation to clarify the positive association found in this study:

“Interestingly, this study found that screen use was also positively associated with developmental outcomes. This differed from MICS 2019 in Thailand, which found no significant association between screen time and childhood development (37). While many studies, particularly in high-income countries (13, 15), suggested that screen use could be harmful, our findings suggested the need for further research. One possible explanation for this positive association is the role of screen devices during the COVID-19 pandemic. With early childhood education centers closed, children with access to screens likely used them for online learning, allowing them to continue their education. Meanwhile, children without access to screen devices may have missed important educational opportunities (38, 39).”

We also adjusted the abstract, method, and conclusion sections accordingly.

Reviewer: 2

Suggestions for authors:

- An additional line outlining details/ background of Multiple Indicator Cluster Surveys (MICS) would help reader’s understanding of this tool. (Page 4, in Background section, para 3 – line 6). For example, MICS is a survey tool which is used on annual basis to gather nationwide population-based data.

Our response:

Thank you for the suggestion. In response, we have added the following line to the Background section to provide more context about the MICS:

Background section (page 4, lines 94-97):

"The Multiple Indicator Cluster Surveys (MICS), conducted by UNICEF periodically (every 3-5 years), is a global survey tool used to gather nationwide, population-based data on key indicators related to the well-being of children and women (21)."

- Sample and procedure – The strength of data will improve if additional line is included at the end of 1st paragraph on page 5 explaining reasoning for including 7212 children out of 10,502 mothers interviewed (i.e. almost 1/3rd of survey participants not included in the study analysis).

Our response:

Thank you for the suggestion. In response, we have added an explanation to the manuscript to clarify why 7,212 children were included out of the 10,502 mothers interviewed. Additionally, we have included Figure 1 (Study flow chart) to further guide readers through the selection process:

Method section (page 5, lines 118-122):

"For this study, we focused on developmentally on track status assessed in children aged 24-59 months, as this is the age group assessed using the ECDI2030 tool in the MICS (27, 28). Consequently, 7,212 children within this age range were included, see Participant flow chart in Figure 1."

Figure 1

- Table 2 – data is analysed for 5972 children out of 7212 study participants. On page 7, paragraph 1 mentions that these numbers are based upon complete information being available. It is worth commenting in discussion section regarding this attrition in number of study participants and if any impacts on the strength of study results.

Our response:

Thank you for your comment. While reviewing your suggestion, we discovered an error in the initial exclusion process, which has now been corrected. As a result, the number of participants analyzed is now 6,557 instead of 5,972. The analysis and results have been updated accordingly. Additionally, this correction revealed a new significant variable, region, which has been incorporated into the findings and discussion. Please see attached the revised Table 3 and Table of best- and worst-case scenarios.

Regarding the missing data, approximately 9% of participants (655 out of 7,212) were excluded, which is not large. To further ensure the robustness of our findings, we conducted sensitivity analyses simulating both best-case and worst-case scenarios:

- In the best-case scenario (assuming all missing participants are developmentally on track), the results remained consistent with the original analysis, including the significance of key variables.
- In the worst-case scenario (assuming all missing participants are not developmentally on track), there was a change in the significance of the "books at home" variable, where it became non-significant.

These sensitivity analyses demonstrated that while missing data may slightly affect some variables (such as books at home), the overall conclusions of the study remain stable.

We have included this discussion in the manuscript to acknowledge and assess the potential impact of missing data.

Discussion section (page 9, lines 304-312):

“As part of our analysis, we considered the potential impact of missing data. In this study, about 9% of participants were excluded due to incomplete data. To assess the potential impact of this missing data, we performed sensitivity analyses using both best-case and worst-case scenarios. In the best-case scenario, where missing participants were assumed to be developmentally on track, the results were consistent with the original analysis. However, in the worst-case scenario, assuming all missing participants were developmentally off track, the variable "books at home" lost its statistical significance. This suggests that while missing data may influence the significance of certain variables, the overall findings of the study remain largely unchanged.”

Here is the discussion about region we have added.

Discussion section (page 9, lines 295-303):

“Regional disparities played a crucial role in early childhood development. Our findings indicated that children living in the Northern and Northeastern regions were significantly less likely to be developmentally on track compared to other parts of the country. These regions have historically struggled with economic growth, infrastructure, and access to education (19). Both the Northern and Northeastern regions lagged in educational infrastructure and access to quality schools, limiting children's exposure to stimulating learning environments (19, 40). Limited access to healthcare and early childhood development programs, along with geographic and financial barriers, further restricted families' ability to support early development (40).”

VERSION 2 – REVIEW

REVIEWER NAME	<i>Chitra Parab</i>
REVIEWER AFFILIATION	Sydney LHD, NSW health, Dept of Community Pediatrics
REVIEWER CONFLICT OF INTEREST	
DATE REVIEW RETURNED	20-Oct-2024

GENERAL COMMENTS	<p>Thanks for comprehensive review of the manuscript while taking into consideration comments from reviewers.</p> <p>The change in number of study participants included in the data analysis and revised statistical findings have been noted.</p> <p>Additional paragraph in the discussion section outlining the best and worst case scenario analysis to imply that overall study findings remain unchanged, has been acknowledged.</p>
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