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ABSTRACTS FROM CURRENT LITERATURE

Short Sleep Duration and Later Overweight in Infants

Tuuli Tuohino, B Med Tuuli Tuohino, Isabel Morales-Muñoz, Outi Saarenpää-Heikkilä, Olli Kiviruusu, Tiina Paunio, Petteri Hovi, Kirsi H. Pietiläinen, E. Juulia Paavonen.

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Objective: To provide further knowledge about the longitudinal association between sleep duration and overweight in infants.

Study design: The data for this study are from the CHILD-SLEEP birth cohort (n = 1679). The sleep data are based on parent-reported total sleep duration collected at 3, 8, 18, and 24 months. For a subgroup of 8-month old participants (n = 350), an actigraph recording was also made. Growth data were derived from the child health clinic records. A logistic regression model was used to study the association between sleep duration and later weight development.

Results: Shorter sleep duration in 3-month-old infants was cross-sectionally associated with lower weight-for-length/height (all *P* values d" .026) and body mass index (all *P* values d" .038). Moreover, short sleep duration at the age of 3 months was associated with greater weight-for-length/height z score at the age of 24 months (aOR 1.56; 95% CI 1.02-2.38) as well as with a predisposition to gain excess weight between 3 and 24 months of age (aOR 2.61; 95% CI 1.75-3.91). No significant associations were found between sleep duration at 8, 18, or 24 months and concurrent or later weight status. Actigraph-measured short night-time sleep duration at the age of 8 months was associated with greater weight-for-length at the age of 24 months (aOR 1.51; 95% CI 1.02-2.23).

Conclusions: Short total sleep duration at the age of 3 months and short night-time sleep duration at the age of 8 months are associated with the risk of gaining excess weight at 24 months of age.

Alternative dosing guidelines to improve outcomes in childhood tuberculosis: a mathematical modelling study

Kendra K Radtke, Kelly E Dooley, Peter J Dodd, Anthony J Garcia-Prats, Lindsay McKenna, Prof Anneke C Hesseling et al.

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Background: Malnourished and young children are particularly susceptible to severe forms of tuberculosis and poor treatment response. WHO dosing guidelines for drugs for tuberculosis treatment are based only on weight, which might lead to systematic underdosing and poor outcomes in these children. We aimed to assess and quantify the population effect of WHO guidelines for drug-susceptible tuberculosis in children in the 20 countries with the highest disease burden.

Methods: We used an integrated model that linked country-specific demographic data at the individual level from the 20 countries with the highest disease burden to pharmacokinetic, outcome, and epidemiological models. We estimated tuberculosis treatment outcomes in children younger than 5 years following WHO guidelines (children are dosed by weight bands corresponding to the number of fixed-dose combination tablets [75 mg rifampicin, 50 mg isoniazid, 150 mg pyrazinamide]) and two alternative dosing strategies: one based on a proposed algorithm that uses age, weight, and available formulations, in which underweight children would receive the same drug doses as would normal weight children of the same age; and another based on an individualised algorithm without dose limitations, in which derived doses results in target exposure attainment for the typical child.

Findings: We estimated that 57 234 (43%) of 133 302 children younger than 5 years who were treated for tuberculosis in 2017 were underdosed with WHO dosing and only 47% of children would reach the rifampicin exposure target. Underdosing and subtherapeutic exposures were more common

among malnourished children than among age-matched healthy children. The proposed dosing approach improved estimated rifampicin target exposure attainment to 62% and equalised outcomes by nutritional status. An estimated third of unfavourable treatment outcomes might be resolved with this dosing strategy, saving the lives of a minimum of 2423 children in these countries annually. With individualised dosing approaches, almost all children could achieve adequate exposure for cure.

Interpretation: This work shows that a simple change in dosing procedure to include age and nutritional status, requiring no additional measurements or new drug formulations, is one approach to improve tuberculosis treatment outcomes in children, especially malnourished children who are at high risk of mortality.

Unintentional injuries and violence among adolescents aged 12-15 years in 68 low-income and middle-income countries: a secondary analysis of data from the Global School-Based Student Health Survey

Prof Liyuan Han, Prof Dingyun You, Xuping Gao, Shiwei Duan, Prof Guoqing Hu et al.

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Background: Injuries and violence account for a substantial proportion of the global burden of disease in adolescents, especially among low-income and middle-income countries (LMICs). We aimed to compare the prevalence of unintentional injuries and violence among young adolescents in LMICs.

Methods: We did a secondary analysis of data from the Global School-based Student Health Survey (GSHS) for adolescents aged 12-15 years from LMICs collected between 2009 and 2015. Survey data was collected using a standardised questionnaire. We used survey data to calculate the overall prevalence of serious injuries and violence (eg, physical attack, physical fighting) and bullying per country. We did a random-effects meta-analysis to calculate pooled overall and regional estimates. We also did subgroup analyses stratified by sex, age (12-13 years *vs* 14-15 years), and time period (2009-11 *vs* 2012-15). Logistic regression models adjusted for sex, weights, stratum, and primary sampling unit were used to analyse the differences in prevalence of serious injuries, violence, and bullying.

Findings: We included data from 68 LMICs, including 164 633 young adolescents (77 707 [47·2%] boys; 86 926 [52·8%] girls). The overall prevalence of physical attack, physical fighting, and serious injuries during the past 12 months were 35·6% (95% CI 30·7-40·5), 36·4% (29·9-42·9), and 42·9% (39·0-46·9), respectively. Prevalence varied by WHO region and was higher among boys than girls for injuries (47·8% *vs* 37·5%, p=0·00094), physical attack (41·0% *vs* 29·4%, p=0·001), and physical fighting (45·5% vs 26·9%, p<0·0001). Fractures (22·6%, 95% CI 19·1-26·1) and cuts (21·8%, 16·8-26·8) were the most common types of serious injury, and falling was the main cause of these injuries (33·1%, 30·2-35·9). The overall prevalence of bullying at least once in the past 30 days was 34·4% (27·1-41·7), irrespective of age and sex. The most common types of bullying were physical (18·3%, 13·7-23·0), verbal-sexual (13·2%, 10·2-16·2), and racial-ethnic (11·6%, 9·2-14·0).

Interpretation: The prevalence of unintentional injuries and violence remain high among young adolescents in LMICs. These countries should prioritise the development of anti-violence and anti-injury programmes to improve health in their young adolescent populations.

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Pre-emptive intervention versus treatment as usual for infants showing early behavioural risk signs of autism spectrum disorder: a single-blind, randomised controlled trial

Prof Andrew J O Whitehouse, Kandice J Varcin, Gail A Alvares, Josephine Barbaro, Catherine Bent, Maryam Boutrus.

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Background: Great interest exists in the potential efficacy of prediagnostic interventions within the autism spectrum disorder prodrome, but available evidence relates to children at high familial risk.

We aimed to test the efficacy of a pre-emptive intervention designed for infants showing early behavioural signs of autism spectrum disorder.

Methods: In this single-blind, randomised controlled trial done at two specialist centres in Australia, infants aged 9-14 months were enrolled if they were showing at least three early behavioural signs of autism spectrum disorder on the Social Attention and Communication Surveillance-Revised (SACS-R) 12-month checklist. Infants were randomly assigned (1:1) to receive a parent-mediated video-aided intervention (iBASIS-VIPP) or treatment as usual. Group allocation was done by minimisation, stratified by site, sex, age, and the number of SACS-R risk behaviours. Assessments were done at baseline (before treatment allocation) and at the 6 month endpoint. The primary outcome was Autism Observation Scale for Infants (AOSI), which measures early behavioural signs associated with autism spectrum disorder. Secondary outcomes were a range of infant and caregiver outcomes measured by Manchester Assessment of Caregiver-Infant interaction (MACI), Mullen Scales of Early Learning (MSEL), Vineland Adaptive Behaviour Scales, 2nd edition (VABS-2), MacArthur-Bates Communicative Development Inventory (MCDI), and Parenting Sense of Competence (PSOC) scale. This trial is registered with Australian New Zealand Clinical Trials Registry, number ANZCTR126 16000819426.

Findings: Between June 9, 2016, and March 30, 2018, 103 infants were randomly assigned, 50 to the iBASIS-VIPP group and 53 to the treatment-as-usual group. After the intervention, we observed no significant differences between groups on early autism spectrum disorder behavioural signs measured by the AOSI (difference estimate “0·74, 95% CI “2·47 to 0·98). We also observed no significant differences on secondary outcomes measuring caregiver non-directiveness (0·16, “0·33 to 0·65), caregiver sensitive responding (0·24, “0·15 to 0·63), and infant attentiveness (“0·19, “0·63 to 0·25) during parent–child interactions (MACI), as well as on researcher-administered measures of receptive (1·30, “0·48 to 3·08) and expressive language (0·54, “0·73 to 1·80), visual reception (0·31, “0·77 to 1·40), and fine motor skills (0·55, “0·32 to 1·41) using the MSEL. Compared with the treatment-as-usual group, the iBASIS-VIPP group had lower infant positive affect (“0·69, “1·27 to “0·10) on the MACI, but higher caregiver-reported receptive (37·17, 95% CI 10·59 to 63·75) and expressive vocabulary count (incidence rate ratio 2·31, 95% CI 1·22 to 4·33) on MCDI, and functional language use (difference estimate 6·43, 95% CI 1·06 to 11·81) on VABS. There were no significant group differences on caregiver-reported measures of MCDI infant gesture use (3·22, “0·60 to 7·04) and VABS social behaviour (3·28, “1·43 to 7·99). We observed no significant differences between groups on self-reported levels of parenting satisfaction (difference estimate 0·21, 95% CI “0·09 to 0·52), interest (“0·23, “0·62 to 0·16) and efficacy (“0·08, “0·38 to 0·22) on PSOC.

Interpretation: A pre-emptive intervention for the autism spectrum disorder prodrome had no immediate treatment effect on early autism spectrum disorder symptoms, the quality of parent–child interactions, or researcher-administered measures of developmental skills. However, we found a positive effect on parent-rated infant communication skills. Ongoing follow-up of this infant cohort will assess longer-term developmental effects.