



SESSION III

Autism Spectrum Disorder and vitamin D status: A cross-sectional study of children in a developing country in Southeast Asia

Assoc. Professor Subhashini Jayanath & Professor Cheryl Dissanayake

Thursday, July 20th, 2023 // 8:00 pm EDT

Course Materials

The purpose of these materials is to help provide an introduction to the INSAR Institute session. The materials were designed to prepare students and trainees who are unfamiliar with this research with the general background to receive the most educational benefit from the session. Toward this objective, we have prepared the following: (1) learning objectives for this session, (2) key terms and concepts, (3) a selection of recommended resources. These materials are considered supplemental to the presentation. Register for this webinar and other sessions in this series at: <https://www.autism-insar.org/page/Institute2023>

In collaboration with Dr. Subhashini Jayanath and Professor Cheryl Dissanayake, these materials were developed by **Dr. Jiedi Lei** (Clinical Psychology Trainee at the Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; jiedi.lei@kcl.ac.uk), **Michal Cook** (Graduate student at the University of North Carolina Chapel Hill, USA; michal.cook@unc.edu), **Sapir Soker-Elimaliah** (Postdoc Scholar, University of Southern

California; sapir.soker@chan.usc.edu), **Emily Spackman** (Graduate student, University of Melbourne; espackman@studnet.unimelb.edu.au), **Imene Kassous** (Graduate student, University of Glasgow; i.kassous.1@research.gla.ac.uk).

Learning Objectives

The INSAR Institute for Autism Research was established in direct response to requests from students and trainees for multidisciplinary training opportunities. The INSAR Institute team is also working to engage stakeholders. The INSAR Institute's priorities are to provide a (1) freely available, (2) multidisciplinary training platform for young scientists and others from various backgrounds that (3) allows for international participation.

The overarching goal of the INSAR Institute is to expose junior scientists to topics they are not currently engaged in, with the hope that basic scientists and clinical scientists may learn from each other to ultimately advance the understanding of autism. This year, the series is aimed at adopting a global perspective to showcase similarities and differences in the process of conducting autism research across a number of geographic locations and fields of research, including neuroscience, psychology, and public health.

This session, on the role of social identity threat on the experiences of autistic individuals in healthcare environments, is presented by Associate Professor Dr. Subhashini Jayanath and will be discussed by Professor Cheryl Dissanayake. *At the conclusion of this session, participants will:*

1. **Understand** the prevalence and risk factors of vitamin D deficiency in autistic children in South-East Asia.
2. **Learn about** the association between vitamin D deficiency with autism severity.
3. **Consider** practical implications around vitamin D supplements for children across the course of development.

Note: The key study that will be reviewed in this session will be: Jayanath et al. (2021)

Key Terms

Aberrant Behaviour Checklist, 2nd Edition (ABC-2) is a parent rated measure used to assess a range of 58 different challenging behaviors, including stereotypies, irritability and agitation. Each item is rated on a four-point Likert scale, with higher total scores indicating more behavioral difficulties (Aman et al., 1985).

Childhood Autism Rating Scale, 2nd Edition (CARS-2) is a widely used validated ASD assessment tool and used to identify and determine autism symptom severity. CARS-2 uses a 7-point Likert scale and is based on direct observation (Schopler, 1994).

Vitamin D deficiency Prevalence of vitamin D deficiency in ASD varies from 57% (Saad et al., 2016) to 96.8% (Arastoo et al., 2018), depending on the cut-off level of the studies. A systematic review that evaluated the association between vitamin D status and autism hypothesized potential impact on both brain development and gene regulation (Kočovská et al., 2012). To the authors' knowledge at the time of publication of Jayanath et al. (2021), there were 12 published studies on the prevalence of vitamin D deficiency or insufficiency in children with ASD from Africa (Saad et al., 2016), East Asia (Dong et al., 2017; Feng et al., 2017; Gong et al., 2014; Guo et al., 2019; Liu et al., 2016), West Asia (Altun et al., 2018; Arastoo et al., 2018; Coşkun et al., 2016; El-Ansary et al., 2018), Europe (Kerley et al., 2017), and North America (Adams et al., 2011).

Recommended Readings & Resources

- Adams, J. B., Audhya, T., McDonough-Means, S., Rubin, R. A., Quig, D., Geis, E., Gehn, E., Loresto, M., Mitchell, J., Atwood, S., Barnhouse, S., & Lee, W. (2011). Nutritional and metabolic status of children with autism vs. Neurotypical children, and the association with autism severity. *Nutrition & Metabolism*, 8(1), 34.
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<https://doi.org/10.9758/cpn.2018.16.4.383>
- Aman, M. G., Singh, N. N., Stewart, A. W., & Field, C. J. (1985). Psychometric characteristics of the aberrant behavior checklist. *American Journal of Mental Deficiency*, 89(5), 492–502.
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<https://doi.org/10.1016/j.gene.2016.05.004>
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- Gong, Z.-L., Luo, C.-M., Wang, L., Shen, L., Wei, F., Tong, R.-J., & Liu, Y. (2014). Serum 25-hydroxyvitamin D levels in Chinese children with autism spectrum disorders. *Neuroreport*, 25(1), 23–27. <https://doi.org/10.1097/WNR.0000000000000034>
- Guo, M., Zhu, J., Yang, T., Lai, X., Lei, Y., Chen, J., & Li, T. (2019). Vitamin A and vitamin D deficiencies exacerbate symptoms in children with autism spectrum disorders. *Nutritional Neuroscience*, 22(9), 637–647. <https://doi.org/10.1080/1028415X.2017.1423268>
- Jayanath, S., Fong, C. Y., & Sarvananthan, R. (2021). Autism spectrum disorder and vitamin D status: A cross-sectional study of children in a developing country in Southeast Asia. *Research in Autism Spectrum Disorders*, 84, 101786. <https://doi.org/10.1016/j.rasd.2021.101786>
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