



## Is the ASD - Autism Spectrum Disorders Morbidity in Children and Adolescents Requires the Dissemination of Nutritional Interventions and Reducing the Risk of Chemical Pollution in the Environment?

Lucjan Szponar\* and Maciej Oltarzewski

Department of Food and Nutrition Safety, National Food and Nutrition Institute, Poland

### Introduction

The health disturbances because of ASD (Autism Spectrum Disorders) focus attention of public health leaders, psychologists, pedagogues and physicians, mainly pediatricians for several decades [1-3].

The etiology of the above-mentioned health disorders, related to genetic, sociological and environment polluted by chemicals, has not been satisfactorily explained over the last three decades [4-9].

### Sources of Data

While reviewing the literature of the above-mentioned health disorders, PUBMED was analyzed, mainly from the beginning of the last decade of the 20<sup>th</sup> century, until 2018.

The presented results, 1990-2018 can have different, interpretations taking into account the recommendations of the new American psychiatric classification DSM-5 published in 2014 (Diagnostic and Statistic Manual of Mental Disorders-5) [3].

Based on data from the Demographic Yearbook for Poland for 2017, it was found that among children, above two years and adolescents up to 17 years of age, the population of boys is 3,155,000 and girls 2,994,000 [10].

### Analysis of the Data

According to CDC (Centers for Diseases Control and Prevention) in the USA, the prevalence of ASD increased from 1 case to 150 children in 2000, to 1 case to 59 children in 2014, i.e., over 2.5 times. Current epidemiological analysis shows that the increase of the prevalence of ASD is primarily the result of higher, early reporting of children, as a result of a more complete awareness of parents [11].

The presented data show that population ASD is at the level of approx 1.0%, with the ratio of boys to girls as much as 4 to 1.

Three groups of factors that can reduce the risk of developing ASD disorders in children and adolescents, more often found in boys, were distinguished:

1. Strengthening the proper functioning of the axis of the gut microbiome - the brain, with particular emphasis on its microglia cells [12-18].
2. Introduction of diets reducing the risk of malnutrition and abnormal nutritional status of children with ASD [4,19].
3. Reducing the exposure of children and adolescents population to environmental chemical pollution [20,21].

### Conclusions

1. It was estimated based on the above-mentioned values that in Poland the number of boys with ASD risk may be not more than 30,000 and in girls four times less i.e., around 7,500.

### OPEN ACCESS

#### \*Correspondence:

Lucjan Szponar, Department of Food and Nutrition Safety, National Food and Nutrition Institute, Warsaw, Poland,  
E-mail: L.Szponar@izz.waw.pl

Received Date: 27 Nov 2018

Accepted Date: 02 Jan 2019

Published Date: 08 Jan 2019

#### Citation:

Szponar L, Oltarzewski M. Is the ASD - Autism Spectrum Disorders Morbidity in Children and Adolescents Requires the Dissemination of Nutritional Interventions and Reducing the Risk of Chemical Pollution in the Environment?. *Ann Nutr Food Sci.* 2019; 3(1): 1038.

Copyright © 2019 Lucjan Szponar.

This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

2. There are no epidemiological data from representative studies on the prevalence of ASD in children between 3 and 17 years of age in Poland. It is necessary to carry out an appropriate diagnosis.

3. In view of the probably common endocrine chemical disruptor's exposure in Poland, damaging microbiome, probably in the dominant part of the population and also increasing the risk of central nervous system dysfunction on some mark, it can confirm the above-mentioned ASD incidence rate.

4. One of the overriding problems of prevention of ASD is a reduction in the frequency of using several hundred endocrine chemical disruptors in the national economy, especially in agriculture, mass catering and the cosmetics industry.

## References

1. Crews D, McLachlan JA. Epigenetics, evolution, endocrine disruption, health, and disease. *Endocrinology*. 2006;147(6 Suppl):S4-10.
2. Chrzanowska I. Wiedza na temat autyzmu wśród obecnych i przyszłych pedagogów a dylemat wspólnego kształcenia i integracji w wymiarze edukacyjnym. *Rocznik Lubuski*. 2012;38(2):105-15.
3. Huerta M, Bishop SL, Duncan A, Hus V, Lord C. Application of DSM-5 criteria for autism spectrum disorder to three samples of children with DSM-IV diagnoses of pervasive developmental disorders. *Am J Psychiatry*. 2012;169(10):1056-64.
4. Carter CJ, Blizard RA. Autism genes are selectively targeted by environmental pollutants including pesticides, heavy metals, bisphenol A, phthalates and many others in food, cosmetics or household products. *Neurochem Int*. 2016 Oct 27;pii:S0197-0186(16)30197-8.
5. Uwaezuoke SN. Autism Spectrum Disorder in Children: The Disparities between the Developed and Developing Countries. *Autism Open Access*. 2015;5(3).
6. Siniscalco D, Schultz S, Brigida AL, Antonucci N. Inflammation and Neuro-Immune Dysregulations in Autism Spectrum Disorders. *Pharmaceuticals (Basel)*. 2018;11(2):E56.
7. Edmonson CA, Ziats MN, Rennert OM. A Non-inflammatory Role for Microglia in Autism Spectrum Disorders. *Frontiers in Neurology*. 2016;7:9.
8. Clapp M, Aurora N, Herrera L, Bhatia M, Wilen E, Wakefield S. Gut microbiota's effect on mental health: The gut-brain axis. *Clin Pract*. 2017;7(4):987.
9. Rybakowski F, Bialek A, Chojnicka I, Dziechciarz P, Horvath A, Janas-Kozik M, et al. Autism spectrum disorders - epidemiology, symptoms, comorbidity and diagnosis. *Psychiatr Pol*. 2014;48(4):653-65.
10. GUS. Demographic Yearbook 2017. 2017.
11. Baio J, Wiggins L, Christensen DL, Maenner MJ, Daniels J, Warren Z, et al. Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years - Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2014. *MMWR Surveill Summ*. 2018;67(6):1-23.
12. Berding K, Donovan SM. Microbiome and nutrition in autism spectrum disorder: current knowledge and research needs. *Nutr Rev*. 2016;74(12):723-36.
13. Privett D. Autism Spectrum Disorder - Research Suggests Good Nutrition May Manage Symptoms. *Today's Dietitian*. 2013;15(1):46.
14. Liu J, Zhang M, Kong XJ. Gut Microbiome and Autism: Recent Advances and Future Perspectives. *N Am J Med Sci*. 2016;9(3):104-15.
15. Liu RT. The microbiome as a novel paradigm in studying stress and mental health. *Am Psychol*. 2017;72(7):655-67.
16. Hollister EB, Riehle K, Luna RA, Weidler EM, Rubio-Gonzales M, Toni-Ann M, et al. Structure and function of the healthy pre-adolescent pediatric gut microbiome. *Microbiome*. 2015;3:36.
17. Tetel MJ, de Vries GJ, Melcangi RC, Panzica G, O'Mahony SM. Steroids, stress and the gut microbiome-brain axis. *J Neuroendocrinol*. 2018;30(2).
18. Galderisi S, Heinz A, Kastrup M, Beezhold J, Norman S. Toward a new definition of mental health. *World Psychiatry*. 2015;14(2):231-3.
19. Flandroy L, Poutahidis T, Berg G, Clarke G, Dao MC, Decrestecker E, et al. The impact of human activities and lifestyles on the interlinked microbiota and health of humans and of ecosystems. *Sci Total Environ*. 2018;627:1018-38.
20. Cronk J. Workshop report: Glia's role in autism. *Alia Autism*. 2013.
21. Ha S, Sohn JJ, Kim N, Sim HJ, Cheon KA. Characteristics of Brains in Autism Spectrum Disorder: Structure, Function and Connectivity across the Lifespan. *Exp Neurobiol*. 2015;24(4):273-84.