

## Abstract

# Assessment of Nutrients Intake and Dietary Consumption Patterns among Autistic Children in Gaza City, Palestine <sup>†</sup>

Rose A. Qishawi <sup>1,2,\*</sup>, Mai Ramadan <sup>3</sup> and Sameer Radi <sup>2</sup>

<sup>1</sup> Master Program of Clinical Nutrition, Al-Azhar University Gaza (AUG), Gaza P.O. Box 405, Palestine

<sup>2</sup> Ministry of Health, Gaza P.O. Box 860, Palestine; samir\_radi@hotmail.com

<sup>3</sup> Faculty of Pharmacy, Al-Azhar University Gaza (AUG), Gaza P.O. Box 405, Palestine; drramadan75@outlook.com

\* Correspondence: atarose516@gmail.com

<sup>†</sup> Presented at the Second International Conference on Applied Medical Sciences 2023 (ICAMS-II) and the International Conference on Enhancing Clinical Nutrition in Palestine (ECNAD), Gaza, Palestine, 14–16 March 2023.

**Abstract:** Autism is a neurodevelopmental disorder that may affect the nutritional management of children. This study was conducted to: (1) describe the effects of sociodemographic factors on the nutritional status of autistic children in Gaza; (2) estimate macro- and micronutrients dietary intake of autistic children; (3) evaluate nutrients intake adequacy; (4) predict the prevalence of iron deficiency anemia and serum zinc deficiency among autistic children; (5) assess anthropometric indicators among autistic children; and (6) predict factors associated with iron deficiency anemia, serum zinc deficiency, and stunting among the autistic studied sample. A cross-sectional study was conducted on 110 purposively selected autistic children who attended three rehabilitation centers in Gaza city from March to December 2018. The nutritional status of all participants was assessed using anthropometric data and biochemical assessment, and all parents filled out the interview and dietary questionnaires. An inadequate daily intake of some micronutrients such as calcium, magnesium, iron, zinc, vitamin A, and vitamin C was found among autistic children in Gaza. The daily intake of calcium was inadequate by all examined autistics. The prevalence of low serum zinc level and iron deficiency anemia was high at 55.5% and 49.1% among autistics, respectively. The prevalence of stunting was 11.9%. Statistically significant relations between nutritional inadequacy, anemia, and serum zinc level were found with economic status and eating behaviors. Autistics in the Gaza Strip have several medical and nutritional problems. It is imperative to conduct a detailed individualized nutritional assessment of those nutritionally vulnerable populations, which may decrease co-morbidities in addition to nutritional education programs.

**Keywords:** autism spectrum disorder; nutrition; macronutrients; micronutrients; anemia; serum zinc level; RDA; Gaza; Palestine



**Citation:** Qishawi, R.A.; Ramadan, M.; Radi, S. Assessment of Nutrients Intake and Dietary Consumption Patterns among Autistic Children in Gaza City, Palestine. *Proceedings* **2023**, *88*, 12. <https://doi.org/10.3390/proceedings2023088012>

Academic Editors: Marah Shakhshir and Sameer Abu-Eid

Published: 25 August 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Author Contributions:** Conceptualization, R.A.Q. and S.R.; methodology, M.R.; software, M.R.; validation, R.A.Q., M.R. and S.R.; formal analysis, R.A.Q.; investigation, R.A.Q.; resources, R.A.Q.; data curation, R.A.Q.; writing—original draft preparation, R.A.Q.; writing—review and editing, M.R.; visualization, M.R.; supervision, S.R.; project administration, S.R.; funding acquisition, M.R. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of name of the Palestinian Health Research Council.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** <https://www.alazhar.edu.ps/library/allarchive.asp> (accessed on 1 July 2019).

**Conflicts of Interest:** The authors declare no conflict of interest.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.