

INPLASY PROTOCOL

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Conflicts of interest:
None declared.

INTRODUCTION

Review question / Objective: To elucidate the literature available regarding the nutritional status and feeding behavior in children with Autism Spectrum Disorder (ASD) in Middle East and North Africa (MENA) region.

Nutritional status and feeding behavior of children with autism spectrum disorder in the Middle East and North Africa Region: A systematic review

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Review question / Objective: To elucidate the literature available regarding the nutritional status and feeding behavior in children with Autism Spectrum Disorder (ASD) in Middle East and North Africa (MENA) region.

Condition being studied: Autism spectrum disorder (ASD), a neurodevelopmental condition characterized by persistent challenges in social interaction, speech, nonverbal communication, and repetitive/restrictive behavior.

Eligibility criteria: Children from the MENA region diagnosed with ASD, of both genders, ages 2-19 years. Outcomes reporting either anthropometrics, serum nutrient levels, nutrient intakes, and/or feeding behaviors. Other inclusion criteria include the availability of full-length published articles in either English or Arabic. Articles presented in conferences, magazines, or newspapers are excluded. If the data are reported in more than one publication, the more recent is included.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 January 2023 and was last updated on 19 January 2023 (registration number INPLASY202310066).

Rationale: Early nutrition is critical for neurodevelopment. It is necessary to understand the current trends in nutritional status and feeding behavior in context to children with ASD in context to the MENA region, to provide an insight into the challenges that necessitate early and comprehensive interventions.

Condition being studied: Autism spectrum disorder (ASD), a neurodevelopmental condition characterized by persistent challenges in social interaction, speech, nonverbal communication, and repetitive/restrictive behavior.

METHODS

Search strategy: For the databases, the key terms include child-related terms separated by “OR”, AND autism-related terms separated by “OR”, AND nutrition-related and eating behavior-related terms separated by OR, AND country-related terms, all separated by the function “OR”. From the grey literature sources, the search limiters include searching for the keyword “Autism” and using filters (language, country, and disciplines) for refining search results. If the filters are not provided, a manual search is conducted. Google search engine is also used in an attempt to find more results, using a combination of the search strategy defined above.

Participant or population: Children with ASD, ages 2 to 19 years.

Intervention: No intervention, we are studying the nutritional status in terms of anthropometric, serum-level of nutrients, nutrient intakes, and feeding behavior.

Comparator: Typically developing children, ages 2 to 19 years.

Study designs to be included: Both observational and experimental study designs.

Eligibility criteria: Children from the MENA region diagnosed with ASD, of both genders, ages 2-19 years. Outcomes reporting either anthropometrics, serum nutrient levels, nutrient intakes, and/or feeding behaviors. Other inclusion criteria include the availability of full-length published articles in either English or Arabic. Articles presented in conferences, magazines, or newspapers are excluded. If the data are reported in more than one publication, the more recent is included.

Information sources: Five electronic databases: Cochrane library trials, EBSCO: CINAHL Complete, EBSCO: Academic Search Complete, Medline/PubMed, and Web of Science.

Grey literature sources included: OpenGrey, Clinicaltrials.gov, Sigma Repository, OAlster, WHO library, and Open Access Theses and Dissertations.

Google search engine.

Main outcome(s): 1. Anthropometric-related data (weight, height, body mass index (BMI), and circumferences)
2. Serum levels-related data (protein and micronutrient adequacy indicators, fatty acids levels, and hematology tests)
3. Nutrient intake-related data (energy, macronutrient, and micronutrient intakes)
4. Feeding behavior-related data (number of meals and snacks, mealtime behavior, and feeding skills).

Additional outcome(s): None.

Data management: Subsequent to the identification of studies, and the title screening, the potential studies are downloaded and stored manually in a folder separate for each database. Duplicate records are removed in this process. Next, the abstracts are reviewed against the eligibility criteria, and the accepted abstracts are stored in a separate sub-folder manually. Finally, the articles are chosen following the completion of a full-text screening and stored in a separate sub-folder manually. For studies without an available published full-text version, the corresponding author is contacted. If no replies are received within 4 weeks, the article is excluded.

Quality assessment / Risk of bias analysis: Tool: The Academy of Nutrition and Dietetics' Quality Criteria Checklist (QCC). The reviewers rate each study on ten criteria, including: Clear research questions, selection bias, comparable study groups, study withdrawals, blinding, description of intervention/exposure in detail, clear outcomes, valid and reliable measurements, statistical analysis, conclusions supported by results (bias

taken into consideration), and study's funding/sponsorship. After examining each study's design and execution, the QCC is used to assign an overall rating. A positive rating is assigned if five or more items are answered with "Yes", including items 2, 3, 6 and 7, indicating a higher quality study and a less risk of bias. If five or more items are answered with "Yes", but questions 2, 3, 6, and 7 are answered in a manner that does not indicate that the study is exceptionally strong, a neutral rating is assigned. A negative rating is assigned if six or more questions are answered as "No".

Strategy of data synthesis: For quality appraisal, two authors assess the methodological quality and risk of bias. A third author is consulted in cases of disparities to resolve any disagreements. For data extraction, data is extracted using a data extraction form designed for the purpose of this review. The first section includes general information about the study's population and characteristics and applied to all studies. The other sections are anthropometric-related data, serum levels-related data, nutrient intake-related data, or feeding behavior-related data. The outcome of interest is the mean and standard deviation of each value, and the difference of means between children with ASD and typically developing children. If an outcome is reported in two or more studies, it is included in the synthesis of results. From experimental studies, only the baseline data of participants is extracted.

Finally, a narrative approach to summarizing and analyzing the body of evidence was included.

Subgroup analysis: No subgroup analysis. The nutritional status and feeding behavior of children with ASD and typically developing children are described; however, no further sub-group analysis is performed.

Sensitivity analysis: Not applicable. This does not include a meta-analysis.

Language restriction: English and Arabic.

Country(ies) involved: United Arab Emirates.

Keywords: Autism Spectrum Disorder; Feeding; Nutrition; Anthropometrics; Middle East; North Africa.

Dissemination plans: To publish the systematic review in a Scopus listed high impact journal.

Contributions of each author:

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