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**Dietary Intakes, Use of Exclusion Diets and
Supplements in Children aged 2 ½ - 8 years
with Autism Spectrum Disorder in New Zealand**

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Abstract

Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects 1 in 68 children. Children with ASD are thought to be a nutritionally vulnerable population due to a tendency to exhibit eating behaviours such as selective or picky eating. Gaining popularity among parents of children with ASD is the use of complementary and alternative medical (CAM) therapies such as exclusion diets and supplements. Little is known about the dietary intakes of this population and whether they are meeting nutrition guidelines. The aim of this study was to investigate the dietary intakes and use of exclusion diets/supplements in children with ASD in New Zealand.

Methods: Fifty children aged 2.5-8 years old with a medical diagnosis of ASD according to the DSM-V were recruited through Waitakere District Health Board (WDHB) and autism support groups. Parents were supplied with a 4-day food diary and dietary questionnaire which was used to collect information on dietary intakes, types of exclusion diets and supplements being used, reasons for use, perceived improvements, and where parents received information from. Dietary data from the 4-day food diaries was also used to conduct a food group analysis. The number of servings from each of the food groups was compared to the Ministry of Health Food and Nutrition Guidelines for Healthy Children and Young People (aged 2-18 years) recommended daily serves.

Results: Children in this study were found to have carbohydrate, protein and fat intakes within the acceptable range. Dietary fibre was found to be a nutrient of concern as 40% of children were not meeting the recommendation. There were a large proportion of children not meeting the Estimated Average Requirement (EAR) for calcium (26% of children). Children were not meeting the recommended number of daily serves of fruit, vegetables or dairy. Significant differences were found when looking at dietary intakes based on exclusion diet status, where children in the exclusion diet group have significantly lower calcium intakes than children in the non-

exclusion diet group ($p=0.03$). This study also found that 31% of children were using exclusion diets and 55% were using supplements.

Conclusion: Results of this study suggest that children with ASD are not meeting the daily recommended servings of various food groups including fruits, vegetables and dairy. Although energy intakes were not impaired, certain nutrients in the diets of children with ASD in this study were below recommended daily intakes, specifically calcium, vitamin D and dietary fibre. Children with ASD may not receive a dietetic referral unless their growth is faltering and therefore nutritional deficiencies may go unnoticed. More research is needed to determine the impact of exclusion diet and supplement use on the nutritional intakes of children with ASD.

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Abbreviations

Abbreviation

AI	Adequate Intake
AMDR	Acceptable Macronutrient Distribution Range
ASD	Autism Spectrum Disorder
BMI	Body Mass Index
CAM	Complementary and Alternative Medical Therapies
CDC	Centre for Disease Control and Prevention
DHA	Docosahexaenoic Acid
DMG	Dimethylglycine
DRI	Dietary Reference Intakes
EAR	Estimated Average Requirement
EPA	Eicosapentaenoic Acid
FDA	Food and Drug Administration
FFQ	Food Frequency Questionnaire
GI	Gastrointestinal
GFCF	Gluten-free, Casein-free
GP	General Practitioner
IOTF	International Obesity Task Force
LBM	Lean Body Mass
RDI	Recommended Daily Intake
LRNI	Lower Reference Nutrient Intake
MOH	Ministry of Health
MUFA	Monounsaturated Fatty Acids
NCNS	National Children's Nutrition Survey
NHANES	National Health and Nutrition Examination Survey
NHI	National Health Index
PUFA	Polyunsaturated Fatty Acids
RDA	Recommended Dietary Allowance
RDI	Recommended Dietary Intake
SCD	Specific Carbohydrate Diet
SFA	Saturated Fatty Acids

TDC	Typically Developing Children
UL	Upper Level
WDHB	Waitamata District Health Board
WPPSI	Wechsler Preschool and Primary Scale of Intelligence