International Journal of Research in Health and Allied Sciences

Journal home page: www.ijrhas.com

Official Publication of "Society for Scientific Research and Studies" [Regd.]

ISSN: 2455-7803

Original Research

Prevalence of non-alcoholic fatty liver disease in normal- weight and overweight preadolescent children

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ABSTRACT:

Background: To assess the prevalence of non- alcoholic fatty liver disease in preadolescent children. **Materials & methods:** A total of 100 children were enrolled. Consent from parents were taken under consideration. Age group of children in a study was 5- 10 years. **Results:** In the total of 100 children, 44 had fatty liver disease. 24 (54.5%) were over-weight and diagnosed with non- alcoholic fatty liver disease. **Conclusion:** The children with over- weight had more chances of being suffering from fatty liver disease.

Keywords: Non- alcoholic fatty liver, overweight, children.

Received: 23 March, 2022 Accepted: 26 April, 2022

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This article may be cited as: Amandeep, Aarti. Prevalence of non-alcoholic fatty liver disease in normal- weight and overweight preadolescent children. Int J Res Health Allied Sci 2022; 8(3):33-34.

INTRODUCTION

Pediatric non-alcoholic fatty liver disease (NAFLD) is the most common chronic liver disease in children, with its prevalence rising in parallel with the increased rates of overweight and obesity. NAFLD is a multisystem disease also affecting extrahepatic organs, and it has a long-term impact on health which extends into adulthood and causes significant morbidity and mortality. [(1,2)]

Prenatal factors predisposing for NAFLD are maternal body mass index, metabolic syndrome, gestational diabetes, and low birth weight of the child influencing the metabolic programming. With all these influences, lifelong health and disease risk is programmed in a way that may lead to obesity and insulin resistance, which are risk factors of NAFLD. [(3)]

Free sugars, such as sucrose or fructose, are consumed in quantities two to three times the recommended intake, which is less than 10% of energy intake, and cause a fatty liver due to overweight and obesity. Especially high intake of fructose, which is metabolized mostly in the liver, affects hepatic energy metabolism with modulation of the liver gene expression involved in the regulation of different metabolic pathways which lead to hepatic steatosis, with fructose being an inducer of and a substrate for hepatic lipogenesis . A high intake of fructose can explain some cases of "lean" NAFLD . [(4,5)]

MATERIALS & METHODS

A total of 100 children were enrolled. Consent from parents were taken under consideration. Age group of children taken to study was 5- 10 years. Children were categorized according to the weight and BMI index as normal and overweight. Further clinical investigations were done. Ultrasound testing was done and results were obtained.

RESULTS

In the total of 100 children, 44 had fatty liver disease. Out of which 8 (18.2%) children were normal in weight but diagnosed with fatty liver disease. 24 (54.5%) were over-weight and diagnosed with non-alcoholic fatty liver disease. Remaining were obese and had fatty liver disease.

Table: Children with fatty liver disease

Variable	Number of children with fatty liver disease N= 44	Percentage
Weight		
Normal	8	18.2%
Over -weight	24	54.5%

DISCUSSION

To document the prevalence of non-alcoholic fatty liver disease (NAFLD) and metabolic parameters among normalweight and overweight schoolchildren. Ultrasound testing was done, and 215 with fatty liver on ultrasound underwent further clinical, biochemical and virological testing.

Prevalence of fatty liver on ultrasound, and NAFLD and its association with biochemical abnormalities and demographic risk factors. On ultrasound, 215 (22.4%) children had fatty liver; 18.9% in normal-weight and 45.6% in overweight category. Presence and severity of fatty liver disease increased with body mass index (BMI) and age. Among the children with NAFLD, elevated SGOT and SGPT was observed in 21.5% and 10.4% children, respectively. [(6)]

Reports on NAFLD among Indian children are limited. Among 4-18 years old Kashmiri school children, NAFLD was documented in 7.4% in all children (26% in obese children). [(7)] In a hospital-based study from Delhi, 3% of children aged 5-12 years had fatty liver. [(8)]NAFLD was documented on ultrasound in 33.9% normal-weight and 66.1% of overweight adolescents aged 11-15 years in Mumbai. [(9)]

Iranian children with NAFLD, raised liver enzymes were reported in 4.1% and 6.6% of the normal-weight children and 16.9% and 14.9% of the obese children (6-18 years), respectively.[(10)] Although higher proportion of liver enzyme derangement was observed in our study, the trend across the BMI category and severity of fatty liver was consistent.

CONCLUSION

The children with over- weight had more chances of being suffering from fatty liver disease.

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