



METABOLIC SYNDROME RISK ASSESSMENT IN INDIAN CHILDREN AND ADOLESCENTS

Archana Dayal Arya, Vasundhara Chugh
Division of Pediatric & Adolescent Endocrinology, Institute of Child Health, Sir Ganga Ram Hospital, New Delhi, India

INTRODUCTION

Prevalence rate of Metabolic Syndrome in children vary and depends on the criteria used.

National Cholesterol Education Program's (NCEP) or Adult Treatment Panel III (ATP III) definition (for children 12–18 years): Individuals with more than or equal to 3 of the following are considered at risk for MS:

- Age and sex specific waist circumference more than or equal to 90th percentile, fasting plasma glucose more than 110 mg/dL,
- Triglycerides more than or equal to 110 mg/dL,
- HDL cholesterol less than or equal to 40 mg/dL,
- BP more than or equal to 90th percentile for age and sex.

The International Diabetes Federation's (IDF) definition: presence of central obesity and any two of the four factors:

	10 to <16 years	≥16 years
Obesity (WC)*	≥90th percentile	≥94 cm (males) ≥80 cm (females)
Triglycerides	≥150 mg/dL	≥150 mg/dL
HDL cholesterol	<40 mg/dL	<40 mg/dL (males) <50 mg/dL (females)
Blood pressure	SBP ≥130 mm Hg, or DBP ≥85 mm Hg	SBP ≥130 mm Hg, or DBP ≥85 mm Hg, or Treatment of previously diagnosed hypertension
Fasting plasma glucose	≥100 mg/dL, or known T2DM	≥100 mg/dL, or known T2DM

Though diagnosis of MS cannot be made in 6 to less than 10 years old children, but evaluation should be done in obese children with a family history T2DM, dyslipidemia, MS, hypertension, cardiovascular disease, and/or obesity.

OBJECTIVES

To assess the risk of metabolic syndrome (MS) in children and adolescents as per the recommendation based on the age and sex-specific reference curves for Waist Circumference (WC) for Indian children by Khadilkar et al.

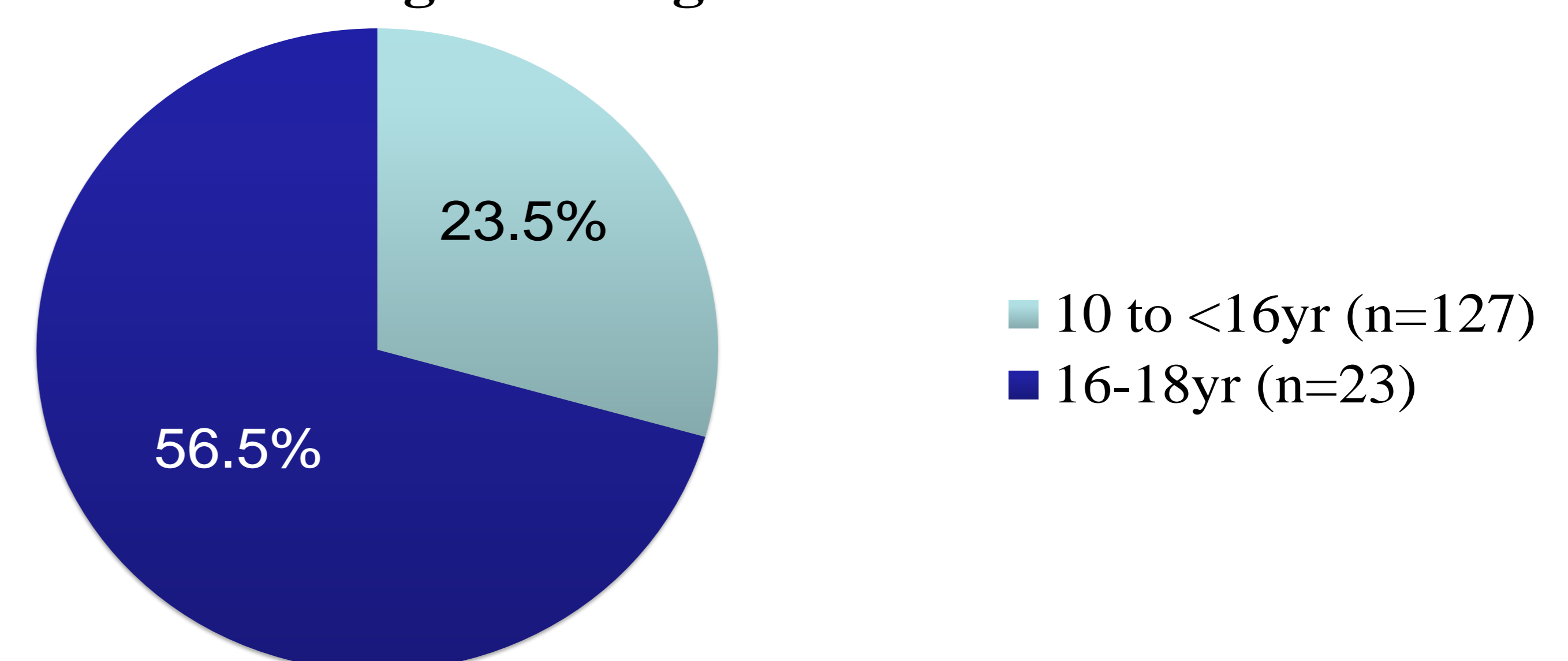
METHODS

A total of 370 children (200 girls, 170 boys) aged 6 to 18 years coming for regular checkups to our center from January 2016 to March 2019 with WC >70th percentile were enrolled. All children were assessed for metabolic syndrome risk factors with respect to BMI, BP measurements, and levels of fasting triglycerides, high-density lipoprotein (HDL) cholesterol, low density lipoprotein (LDL), and fasting plasma glucose were recorded for all patients.

RESULTS

As per IDF definition, 64 out of 240 (26.66%) children in the 10 to 18 year age group met the criteria for pediatric metabolic syndrome.

Percentage meeting the IDF criteria



Those aged 6 to <10 years with a family history of MS, T2DM, dyslipidemia, cardiovascular disease, hypertension and/or obesity were also evaluated for metabolic syndrome. Eighteen out of 130 children (13.84%) met the criteria for metabolic syndrome as per IDF definition in this age group.

Children were also evaluated for MS as per the modified definition proposed by NCEP/ATPIII. As per this definition, 63 out of 158 (39.8%) children in the age group of 12-18yr met the criteria for pediatric metabolic syndrome.

Gender	Males (n=78)	Females (n=80)
Percentage meeting the NECP criteria	34.61%	45%

CONCLUSION

Overall, 39.8% and 26.66% children met the NCEP/ATPIII & IDF criteria respectively. The low incidence of MS with IDF definition may be due to the cut-off value used for blood pressure as systolic BP ≥130 or diastolic BP ≥85mmHg for all age groups.

The WC percentiles proposed for Indian children are useful in identifying children with metabolic syndrome. Early detection and management is vital in halting the progression of this syndrome pathway in children.

Bibliography

1. Khadilkar A, Ekbote V, Chiplonkar S, et al. Waist circumference percentiles in 2–18 year old Indian children. J pediatr. 2014;164:1358-62.
2. Zimmet P, Alberti K, Kaufman F, et al. IDF consensus Group. The metabolic syndrome in children and adolescents: an IDF consensus report. Pediatr Diab. 2007;8:299-306.

