Chapter 02

Cardiovascular Risk Factors in Adolescence. Clinical Epidemiology and Early Prevention (English Version)
ISBN: 978-9915-9875-0-7
DOI: 10.62486/978-9915-9875-0-7.Ch02
Pages: 18-21

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Methodological Approach and Study Design

Enfoque metodológico y diseño del estudio

Study objectives

The purpose of this study was to identify cardiovascular risk factors in adolescents treated in the cardiology department of a referral pediatric hospital during a defined observation period. This research aimed to characterize the risk profile in this clinical population, considering both demographic variables and the presence and accumulation of predisposing factors.

We sought to describe the frequency of the main demographic characteristics of the patients included, as well as to analyze the type and number of risk factors detected in each case. Similarly, associated clinical alterations were evaluated, incorporating electrocardiogram and echocardiogram findings, to explore possible early manifestations of cardiovascular compromise.

Types of study and context

The research was structured as a descriptive observational study with a cross-sectional design and a retrospective approach. The analysis focused on adolescents treated in the Cardiology Department of a referral pediatric hospital within the framework of routine clinical practice.

The population consisted of 132 adolescents who met the criteria established for the study during the defined observation period. Since all cases that met the necessary conditions were included, the sample coincided with the entire eligible population.

Adolescents between the ages of 12 and 18 who had been admitted or evaluated in a specialized cardiology consultation at the aforementioned institution were considered, provided that the available clinical information allowed for a complete analysis of the variables under consideration. Patients with incomplete medical records were excluded to preserve the consistency and quality of the analysis.

Techniques and procedures

The data were collected by the author of the research via a data collection form (appendix 1) based on medical records as a source of information.

To obtain blood lipid levels, a lipid profile was performed on the adolescents included in the study. Sample collection and processing were performed by an experienced technician from the hospital's Clinical Laboratory Department during the current week after the patient was evaluated by appointment and guidance on how to take the tests was provided. The methods used were as follows:

- For cholesterol, enzymatic determination was performed via a Technicon MT-II autoanalyzer (normal levels below 200 mg/dl or below 5,72 mmol/l).
- Triglycerides were measured via enzymatic determination via a Boehringer Manhein kit (normal levels below 120 mg/dl or below 1,58 mmol/L).

The results for cholesterol and triglycerides were as follows:

Normal

- Cholesterol less than 200 mg/dL or less than 5,72 mmol/L.

- Triglycerides less than 120 mg/dl or less than 1,58 mmol/L.

Pathology

- Cholesterol greater than 200 mg/dL or greater than 5,72 mmol/L.
- Triglycerides greater than 120 mg/dL or greater than 1,58 mmol/L.

Nutritional status

The weight-for-height index was used, and fundamentally, the height according to the patient's age, component Evaluation of Nutritional Status, an index that represents the expected height for age, was used to define the nutritional status at the time of evaluation. To define nutritional status, two categories were specified:

- Normal between the 10th and 75th percentiles.
- Overweight between the 90th and 97th percentiles and obese >97th percentile.

The patients included in the study were anthropometrically assessed by the author or research supervisors at the time of the first assessment, taking only those measurements necessary for the assessment.

Table 1. Operationalization of variables

Variable	Scale	Category	Descriptions	Indicator
Child's age	Discrete quantitative	12-13 14-15 16-17 18	According to patient age	Absolute numbers and percentages
Gender	Nominal qualitative (dichotomous)	Female Male	According to biological sex	Absolute numbers Absolute and percentage
Risk factors Clinical Environmental Family history Biochemical	Qualitative nominal (polytomic)	Obesity Diet Smoking Sedentary lifestyle Hypertension	Refers to possible associated factors	Absolute numbers and percentages
	Qualitative nominal (polytomous)	High blood pressure Heart disease Hypercholesterolemia	Refers to whether the adolescent has a family member with a history of the condition	Absolute numbers and percentages
	Qualitative nominal (dichotomous)	Cholesterol and triglycerides Normal Pathological	Refers to biochemical tests performed	Absolute numbers and percentages
Symptoms	Qualitative Ordinal	Asymptomatic Headache Fatigue or Asthenia Chest pain	Refers to the presence of some of the symptoms mentioned	Absolute numbers and percentages
Complementary Performed	Qualitative ordinal	Electrocardiogram (EKG) Echocardiogram (ECHO) Normal Pathological	Refers to the tests performed	Absolute numbers and percentages

Body weight was measured with the patient in underwear, in an upright position, facing forward with arms hanging loosely at the sides of the body, in the morning, and recorded on the data collection form located in the medical records. The same properly calibrated scale was used, with adequate lighting in the room.

Height was measured with the patient standing with their back to the height gauge, where the measuring tape was placed. A straight edge was placed on the patient's head, and the height indicated on the height gauge was recorded, ensuring that the indicator was in a completely horizontal position.

Taking these units into account, the height index was determined according to the patient's age and used as reference standards for the study of the Growth and Physical Development of the Cuban Population (percentile Tables 3p, 10p, 25p, 50p, 75, 90p, and 97p), which are currently in force and standardized for growth assessment in our country.

Electrocardiography (ECG) was performed by an experienced technician from the department and interpreted by the center's cardiology specialist. The echocardiogram (ECO) was performed and reported by expert physicians from the William Soler Cardiology Center after prior coordination, issuing a report on the cases that turned out to be pathological.

For quantitative analysis, frequency distributions, absolute numbers, percentages, and averages were used to detect the magnitude of the problem under study. The statistical test used to compare variables will be the parametric chi-square test for a significance level of $p \leq 0,05$.

Ethical aspects of the research

Approval was obtained from the Research Ethics Committee of Dr. Ángel Arturo Aballi Maternal and Child Hospital. The premise was to respect the bioethical principles implicit in the studies. The confidential nature of the data held by the researchers was emphasized.