



Risk Factors Associated with the Development of Hypertension in Children (Research in Process)

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Introduction and Statement of Problem

Through a 12 year partnership with the Cleveland Municipal School District, the School of Nursing BSN Program at Case Western Reserve University provides selected health services to the district children including the completion of state mandated health screenings. Over the past five years over 8500 5th grade students have been screened for height, weight, BMI and blood pressure. In addition to 200 children with BPs in the hypertensive range, findings include:

- **43% of children are in the overweight or obese categories**
- **320 children were identified with hypertensive range BPs on 2 of 3 separate screenings.**
- **Over 1500 children were identified with BPs in the 85th-90th percentiles.**

Little is known about the significance of these factors in predicting the development of hypertension in the future.

Purpose of the Study

The purpose of the study is to identify risk factors associated with the development of hypertension based on 5th grade BP screening. Children included in the study were identified with normal BPs in the 5th grade but demonstrate one or more of three factors that may be risk indicators for later development of hypertension:

1. BMI in the overweight or obese category
2. BP in the pre-hypertensive range
3. BP in the hypertensive range on 2 of 3 screens.

Description of Study Groups

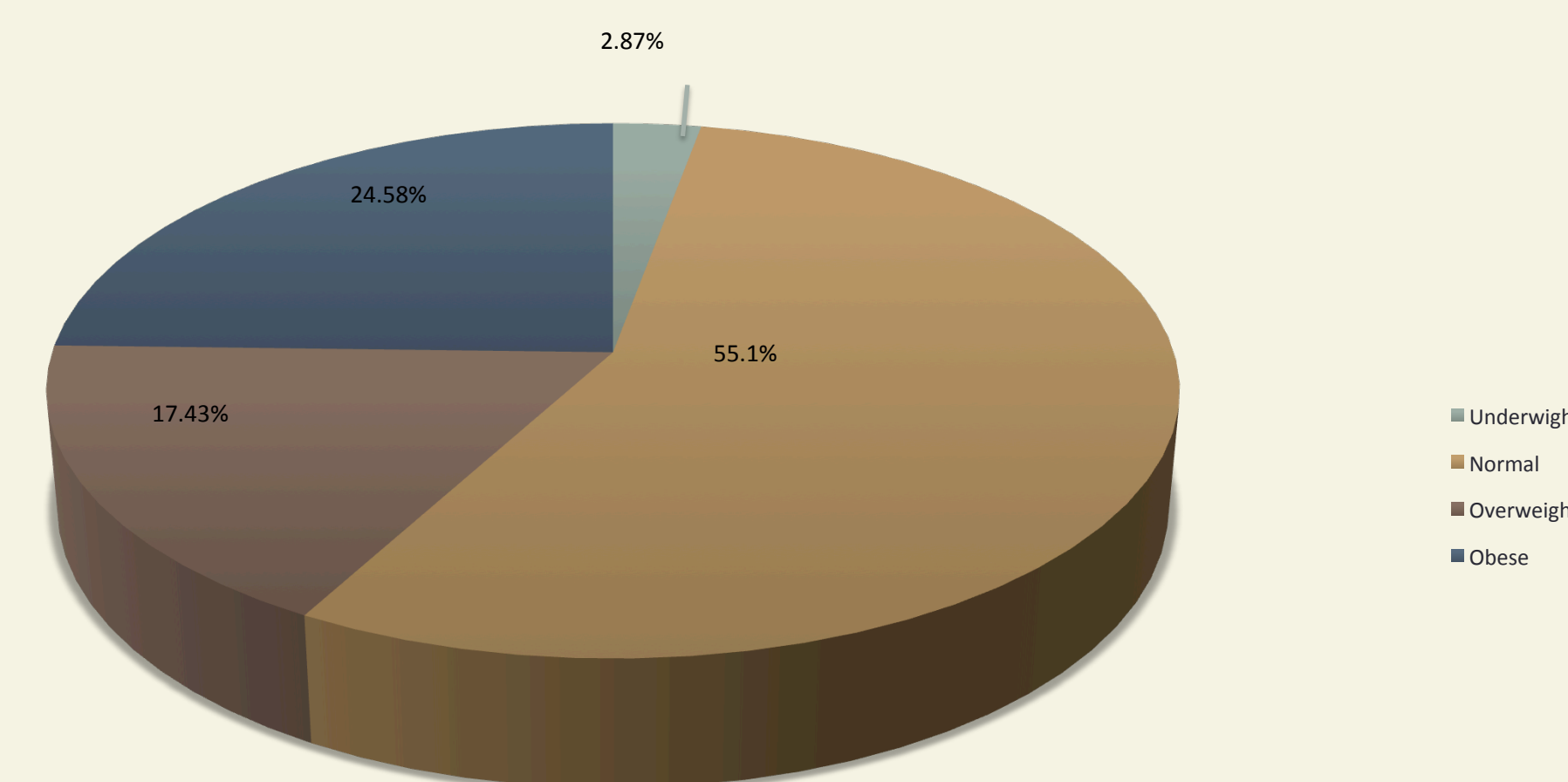
Group 1: Children with 5th grade BPs in the pre-hypertensive range (85th to 90th %ile). N=50/318

Group 2: Children with BPs in the hypertensive range on 2 of 3 5th grade BPs. N=50/64

Group 3: Children with BMIs in the obese range but with normal 5th grade BPs. (N=50)

Group 4: Children with BMIs and BP in the normal range when screened in the 5th grades provide a comparison group. (N=50)

Figure 1: BMI Categories in 5th Grade



Procedure

Children demonstrating one of The three identified risk factors in the 5th grade are screened again in the 6th grades to determine whether the incidence of the development of hypertension is increased as compared to children with no identified risk factors.

- Informed consent and child assent is obtained for each participating child.
- BPs are taken on three separate dates with three readings taken on each date.
- BP protocol is based on the CDC Fourth Report and was reviewed and approved by three experts in hypertension research.
- Determination of the BP percentile for each child's readings is based on a formula that includes, age, gender and height.
- Each participating family is asked to provide a family health history.

Data collection and analysis is still underway due to the challenge in obtaining informed parental consent.