



## DIFFERENCES IN DEVELOPMENT OF UNDERWEIGHT AND OVERWEIGHT REGARDING NUTRITION AND PHYSICAL ACTIVITY IN RELATIONSHIP TO BODY MASS INDEX AMONG RURAL 8, 9, AND 10 YEAR OLD CHILDREN

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### **Abstract:**

Underweight and overweight in Albania are very big problems of children. In my view as physical education teacher, requesting the field of sports for me is an alarm; these children are growing old. **The purpose** of this study is to gain a better understanding of the knowledge, attitudes, and behaviors of primary school age children in regards to nutrition and physical activity and the relationship to body mass index. **The Sample** Participants in this study were chosen by convenience sampling. Among the three school districts who agreed to participate in the study, 132 children and their parents agreed to participate in the study were collected ages 8, 9, and 10-years-old, in three schools in Elbasan, Albania. The SPAN questionnaire is composed of five sections: 1) demographic profile, 2) questions directed at assessing the participant's nutrition behaviors, 3) questions directed at assessing the participant's physical activity behaviors, 4) questions directed at assessing the participant's attitude regarding nutrition, and 5) questions directed at assessing the participant's nutritional knowledge level. **Data Analysis** The scored data from the questionnaires were entered into SPSS (Version 13.0) which was used to analyze the data. Cross tabulation was used to compare body mass index with gender, age, and growth chart percentiles. A Pearson's Correlation Coefficient (with two-tailed probability) was used to examine the bivariate associations between nutrition knowledge, nutrition behavior, physical activity behavior, nutrition attitude and body-mass index. A significant relationship was found to exist between attitude levels and BMI among 8, 9, and 10-year-old children. A

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positive attitude was shown to be more significantly associated with normal BMI than nutrition knowledge, or nutrition and physical activity behavior. Research indicates that both underweight and overweight in childhood are phenomenon's that beg for research on prevention and intervention.

**Keywords:** underweight, overweight, nutrition, physical activity, body mass index

### Research Questions

1. What is the relationship between knowledge regarding nutrition among rural 8, 9, and 10-year-old children and BMI?
2. What is the relationship between attitudes regarding nutrition and physical activity among rural 8, 9, and 10-year-old children and BMI?
3. What is the relationship between behaviors regarding nutrition and physical activity among rural 8, 9, and 10-year-old children and BMI?
4. What is the effect of demographic factors on the attitudes, knowledge, and behaviors among rural 8, 9, and 10-year-old children regarding nutrition and physical activity?

### Key Words

**Body mass index (BMI).** An indicator of body fatness calculated from a child's weight and height. (underweight, healthy weight, overweight, and obese).

**Underweight** - A percentile range of less than five.

**Healthy weight** - A percentile range of five to less than 85.

**Overweight** - A percentile range of 85 to less than 95.

**Physical activity** - Any body movement that works the muscles and requires more energy than resting social activity and body mass index.

**BMI percentile.** A ranking of BMI for children and teens by plotting the BMI number on the CDC BMI-for-age growth charts.

Underweight and overweight in Albania are very big problem of children. In my view as a physical education teacher of children in Albania have a bad crop nutrition leading to their underweight and overweight, due to her they have a paralysis of will. Most of them in the class of physical education which should be more energetic and spend more calories, they are too passive a part of them are immobile loop to run and do exercises, another part of them do not receive participate in physical exercises because they are overweight. A phenomenon that is becoming alarming for me as a

teacher of physical education is dependency phone and computer; they are oblivious to the gym because they spend time with-electronics. In my view as physical education teacher requesting the field of sports for me is an alarm, these children are growing old.

More and more children are struggling with their weight. Many children have high cholesterol levels and artery damage which are the first indicators that the child could one day be headed for a heart attack. Overweight in early childhood is a social issue that is garnering increasing attention the Albania. In addition, underweight around the world is a social issue that has far reaching social implications. Both underweight and overweight are influenced by multiple variables (e.g., social factors, food supply, family income; Crespo et al., 2001; Hill & Peters, 1998; Koplan, Liverman, & Kraak, 2005; Onis et al., 2004). Underweight and overweight both have documented physical, mental, academic, social, and emotional negative effects (e.g., CDC, 2008; Datar, Strum, & Magnabosco, 2004; Dietz, 1998; Israel & Ivanova, 2002; Must & Strauss, 1999; Mustillo et al., 2003; Yanovski, 2001).

Existing research demonstrates that overweight during early childhood has become a major concern in the world. Multiple studies have identified mental, physical, social, and emotional deficits related to overweight in childhood and adolescence (e.g., CDC; Datar, Strum, Magnabosco, 2004; Dietz, 1998; Israel & Ivanova, 2002; Must & Strauss, 1999; Mustillo et al., 2003; Yanovski, 2001).

It is widely recognized that the prevalence of overweight among children (defined as body mass index [BMI] >95th percentile-for-age), which continues to be a critical problem<sup>1, 2</sup> has at least doubled in the past 25 years.<sup>3</sup> Over the last 30 years, the age- and gender-specific BMI and proportion of children with BMI > 95th percentile have increased markedly, with almost all the increase in the upper half of the BMI distribution. Therefore, it is suggested that approximately 50% of children have obesity susceptibility genes on which the environment has acted over the last three decades.

Research to date has focused on multiple social and behavioral influences including physical activity and nutrition in order to decrease overweight and the risk of comorbidity. Heritability is also known to play a role in the development of obesity. Children who have one or more parents who are obese are more likely to become overweight than children born to non-obese parents.

Children who are then genetically susceptible to changes in their environment, such as increasing sedentary behaviors, may become more overweight. Behaviors such as decreasing physical activity and increasingly sedentary lifestyle work powerfully with heritability toward obesity, and thus, contribute to overweight development.

Researchers have identified multiple negative social and emotional correlates of overweight in childhood. Depression, negative body image, and lower self-esteem have been shown to correlate positively with childhood overweight (Bell & Morgan, 2000; Datar, Strum, & Magnabosco, 2004; Dietz, 1998; Israel & Ivanova, 2002; Mustillo et al., 2003). Research suggests that children who are chronically overweight are at much greater risk for mental disorders than children who are overweight for a short period in their life (Mustillo et al.).

A statistically significant relationship was found between attitudes regarding nutrition and physical activity and body mass index. There was also a statistically significant relationship between nutrition behavior and physical activity behavior, nutrition knowledge, and attitude.

It is important for researchers to investigate the prevalence of malnutrition to ascertain if a similar migration is occurring. Chang and colleagues (2002) hypothesized that emotional and social deficiencies exhibited by underweight children may be serving as a moderator in academic outcomes. More plainly put, underweight children who exhibit social and emotional problems are at a greater risk to exhibit poor academic outcomes. Researcher have suggested that underweight children throughout the world are more likely to exhibit decreased academic achievement, increased aggressive behaviors, and lower self-esteem (Chang, Walker, Grantham-McGregor, & Powell, 2002; Mendez & Adair, 1999; Walker, Chang, & Powell, 2001; Whaley, Sigman, & Espinosa, 1998).

### **Effects of childhood underweight**

Multiple detrimental effects on the development of children have been identified in relation to underweight (e.g., decreased academic achievement, social problems, challenging behaviors; Chang, Walker, Grantham-McGregor, & Powell, 2002; Mendez & Adair, 1999; Walker, Chang, & Powell, 2001; Whaley, Sigman, & Espinosa, 1998). An alarming outcome of early childhood underweight cited in the literature is decreased school achievement (Walker et al.). Underweight children from both industrialized and non-industrialized nations have exhibited poor academic outcomes (Chang et al.).

Specifically, children who were diagnosed as underweight were more likely to exhibit conduct problems in school such as an inability to sit still or were disruptive in class (Chang et al.). Chang and colleagues found that children who were underweight scored significantly lower on arithmetic tests than their typically weighted peers. Interestingly, the difference in test scores between underweight and typically weighted

children remained significant after controlling for IQ, home, and school environment conditions as well (Chang et al.). It is important to note that school and home environment have been shown to play a role in school

By identifying the relationship between body mass index (BMI) and academic performance in elementary school students, educators can determine the need for promoting student health and proper nutrition. The purpose of this study was to examine the relationships between BMI, stress, physical activity, and academic achievement. This descriptive correlational study is to explore the knowledge, attitudes and behaviors among rural 8, 9, and 10 year old children in regards to nutrition and physical activity and the relationship to body mass index. This study was conducted at three schools in Elbasan Albania Jeronim De Rada, Ali Agjahu, Qamil Guranjaku.

### **Sample**

Participants in this study were chosen by convenience sampling. Among the three school districts who agreed to participate in the study, 132 children and their parents agreed to participate in the study. *Instrumentation* The School Physical Activity and Nutrition (SPAN) questionnaire developed by Hoelscher, Sue Day, Kelder, and Ward (2003) consists of 56 questions. The questionnaire was developed for use in their studies that measured the knowledge, attitudes, and behaviors regarding nutrition and physical activity among school children in Elbasan Albania.

The SPAN questionnaire is composed of five sections: 1) demographic profile, 2) questions directed at assessing the participant's nutrition behaviors, 3) questions directed at assessing the participant's physical activity behaviors, 4) questions directed at assessing the participant's attitude regarding nutrition, and 5) questions directed at assessing the participant's nutritional knowledge level.

### **Data Analysis**

The scored data from the questionnaires were entered into SPSS (Version 13.0) which was used to analyze the data. Cross tabulation was used to compare body mass index with gender, age, and growth chart percentiles. A Pearson's Correlation Coefficient (with two-tailed probability) was used to examine the bivariate associations between nutrition knowledge, nutrition behavior, physical activity behavior, nutrition attitude and body-mass index. A significant relationship was found to exist between attitude levels and BMI among 8, 9, and 10-year-old children. A positive attitude was shown to be more significantly associated with normal BMI than nutrition knowledge, or

nutrition and physical activity behavior. There were no studies in my literature review that examined the relationship between attitude and BMI.

There was a significantly inverse relationship found between cues to action and BMI. Those children with positive cues to action also had higher BMI's. The children who are overweight are being cued that they need to change nutrition and physical activity behaviors and to decrease their body weight. Therefore, overweight children do realize that are overweight and need. This study was designed to explore the knowledge, attitudes, and behaviors regarding nutrition and physical activity in relationship to body mass index among rural 8, 9, and 10 year old children. There was no statistically significant relationship found between nutrition knowledge, nutrition behavior, physical activity behavior and BMI. A significant relationship was found between attitudes regarding nutrition and physical activity and BMI. Therefore, it can be assumed that those children who have positive attitudes regarding nutrition and physical activity also have lower BMI's.

There was also a statistically significant relationship found between nutrition, behavior and physical activity, nutrition behavior and nutrition knowledge, and nutrition behavior and attitude. Therefore, those children who have healthier nutrition behaviors also have increased levels of physical activity, a higher level of nutrition knowledge, and a positive attitude.

This study fills the gap in relevant research of the consequences overweight children face with academic achievement in middle childhood. Some other children are underweight. Evidence shows that there is a relationship between BMI and academic achievement so interventions may affect educational outcomes for children in middle childhood. The following research questions are generated for this research: 1. What is the relationship between knowledge regarding nutrition among rural 8, 9, and 10-year-old children and BMI? 2) What is the relationship between attitudes regarding nutrition and physical activity among rural 8, 9, and 10-year-old children and BMI? 3) What is the relationship between behaviors regarding nutrition and physical activity among rural 8, 9, and 10-year-old children and BMI? 4. What is the effect of demographic factors on the attitudes, knowledge, and behaviors among rural 8, 9, and 10-year-old children regarding nutrition and physical activity?

Physical educators and quality physical education programs can be a major component in reducing childhood obesity (Green, 2006). The curriculum of the physical education program should include nutrition instruction, counseling, exercise classes, and eating control (Green, 2006). Quality physical education programs should focus on maximum participation with all students working at the same time on skills. Another

indicator of a quality program would be that the class is focused on achievement and maintenance of physical fitness levels. Individual progress would determine success instead of group comparison (Green, 2006). Facilities that enhance physical activity should be created and maintained as well as quality physical education provided on a daily basis for all students (Green et al., 2012)

## Measurements

### Child weight

For the purpose of this study, children were grouped into categories of underweight, overweight, and typically weighted. Groupings were made utilizing a health variable from the parent interview data that asked parents whether their child had been diagnosed by a health professional or any other professional as *overweight* ( $n = 44$ ) or *underweight* ( $n = 71$ ) since the child's third birthday. Parents who did not signify that their child had been diagnosed as either *overweight* or *underweight* were placed in the typically weighted category ( $n = 1,944$ ).

### Socio-emotional development

Parents rated their children's social competence, behavior, and school readiness. The "social and emotional development" rating scale had possible response choices ranging from; 1 = *not true*, to 2 = *being somewhat or sometimes true*, to 3 = *being very often true*. Parents were instructed to answer questions based on how their children had behaved in the last two months.

## Conclusion

Both underweight and overweight are influenced by multiple variables (e.g., social factors, food supply, family income; Crespo et al., 2001; Hill & Peters, 1998; Koplan, Liverman, & Kraak, 2005; Onis et al., 2004). Underweight and overweight both have documented physical, mental, academic, social, and emotional negative effects (e.g., CDC, 2008; Datar, Strum, & Magnabosco, 2004; Dietz, 1998; Israel & Ivanova, 2002; Must & Strauss, 1999; Mustillo et al., 2003; Yanovski, 2001). These findings, taken in conjunction with existing research, suggest that underweight in early childhood can affect negatively the socio-emotional development of a young child. Caregivers of underweight children were also more likely to have a higher depression score than the others groups. The disparity found in this study between caregivers' ratings of socio-

emotional development of underweight and typically weighted children is congruent with research on worldwide underweight populations, but also identifies that underweight children in this sample are exhibiting negative socio-emotional outcomes. Few differences between overweight and typically, weighted or underweight children were found. The findings of this study should not be taken as a dissenting voice on previous research, but as additional data that augment the current research on the effects of obesity in early childhood.

However, in our data set there was almost double the amount of underweight compared to overweight ( $n = 71$  to  $n = 44$ , respectively). Overweight in early childhood appears to have multiple contributors. Some of the contributing factors to overweight in childhood are; lack of exercise, increased T.V. watching, and increased calorie consumption (Koplan, Liverman, & Kraak, 2005). Children who are overweight run a greater risk for social, emotional, and physical issues during and after childhood (e.g., CDC, 2008; Datar, Strum, Magnabosco, 2004; Dietz, 1998; Israel & Ivanova, 2002; Must & Strauss, 1999; Mustillo, et al., 2003; Yanovski, 2001). However, research conducted for this thesis showed little difference between overweight children and underweight or typically weighted children in our sample.

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