Nutrition education in the schools: whose job is it?

Judith Maria Malhotra

Medical College of Ohio

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FINAL APPROVAL OF SCHOLARLY PROJECT
Master of Science in Nursing

Nutrition Education in the Schools. Whose Job Is It?

Submitted by

Judith Malhotra

In partial fulfillment of the requirements for the degree of
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Academic Advisory Committee

Susan L. Pocotte, Ph.D.
(Major Advisor)

Sandy Oehrtman, Ph.D.

Interim Associate Dean, Graduate Nursing Programs
Judith Anderson, Ph.D., R.N.

Dean, School of Nursing
Jeri Ann Milstead, Ph.D., R.N., FAAN

Dean, Graduate School
Keith K. Schlender, Ph.D.

Date of Presentation: April 18, 2005

Signature

Suzanne Butt, Ph.D.

Sandy Oehrtman, Ph.D., CPNP

Judith Anderson, Ph.D., RN

Jeri Ann Milstead, Ph.D., RN, FAAN

Keith K. Schlender
Nutrition Education in the Schools.

Whose Job is it?

Judith Maria Malhotra

Medical College of Ohio

2005
Dedication

I would like to dedicate this project to my husband Deepak “Chico” Malhotra, M.D., Ph.D., to my children Kristin and Nathan Malhotra, and to my dear friends Joseph I. Shapiro, M.D. and Mary Shapiro. Without their patience, love, and support this project would not have been completed. I would also like to dedicate this project to my father-in-law, Dr. Om P. Malhotra who was always there to encourage and amuse me with stories of his own graduate school experience. Additionally, a special dedication goes to my parents for their enduring love. Unfortunately, my father is no longer with us at the completion of this project. My thoughts will be with him as I graduate.
Acknowledgements

I would like to acknowledge my academic advisors Dr. Susan L. Pocotte and Dr. Sandy Oehrtman. The guidance afforded to me by these two remarkable women has provided me with invaluable insight into the research process. I am sure that their influence will remain with me always as I contemplate future investigative endeavors. I would also like to acknowledge Ms. Jan Florian, R.N, current president of the Northwest Ohio Association of School Nurses, for her generous assistance with data collection for this project.
Obesity across the lifespan is becoming an issue of increasing concern. Obesity related health problems often begin in childhood. These problems may possibly be reduced by nutrition education at a young age. The role of the school nurse as a nutrition educator has not been explored. Therefore, a set of questionnaires were designed to gather information regarding this role. These questionnaires were validated by individuals in the Northwest Ohio Chapter of the Association of School Nurses. The questionnaires demonstrate content validity with modifications. Modified questionnaires could potentially be distributed on a greater scale to gather information on school nurse’s and school administrator’s perceptions of nutrition education within the school system. Eventually, information gathered may demonstrate the school nurses ability to participate more fully in teaching nutrition education, by removing barriers that currently impede them. By teaching nutrition at an early age, this major health problem, obesity, may be attenuated.
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Chapter I

Introduction

This chapter will provide the reader with a brief statement of the problem to be studied. The purpose of the study will be clearly stated. The theoretical framework that conceptualizes this study will be introduced. Finally, the significance of the study to nursing practice will be explained.

Statement of the Problem

Obesity is a growing concern in our society today. According to Healthy People 2010 (Office of Disease Prevention and Health Promotion, 2002) obesity in adults is defined as a body mass index (BMI) of 29.9 kilograms/meter$^2$ (kg/M$^2$) or more. Overweight in adults is defined as a BMI of 25 to 30 kg/M$^2$. In children overweight and obesity is defined as a body weight at or above the sex and age specific 95 percentile of BMI based on Center for Disease Control (CDC, 1995) growth charts for the United States. It should be noted that the BMI is equal to weight in kg divided by the square of the height in meters. According to the World Health Organization, more than 1 billion adults worldwide are overweight, and 300 million are clinically obese (“Global strategy on diet, physical activity and health,” 2005). In the United States, approximately 64% of adults aged 20 and over are overweight or obese (“Overweight prevalence,” 2004). Likewise, according to the most recent analysis of the National Health and Nutrition Examination Survey (NHANES), 16% of all children in the United States aged 6 through 19 are overweight or obese (“Prevalence of overweight...
It can be seen that the prevalence of overweight and obesity in children and adolescents in the United States has increased dramatically between 1963 and 2002. Figure 1 illustrates the growing prevalence of children and adolescents in the United States from 1963 through 2002 that are overweight.
Obesity is a major cause of morbidity and mortality in the United States population (Hanley et al., 2000). Overweight and obesity are associated with heart disease, certain types of cancer, type 2 diabetes, stroke, arthritis, breathing problems, reproductive complications, and psychological disorders such as depression (Office of Disease Prevention and Health Promotion, 2002). Type 2 diabetes was once considered to be an adult disease. Recently, however, the incidence of type 2 diabetes has increased dramatically in children and adolescents. This increased incidence of type 2 diabetes in children correlates closely with an increase in overweight and obesity in this population (Rosenbloom, Young, Joe, & Winter, 1999). Additionally, Sinha et al. (2002) have
demonstrated a correlation between the condition of being overweight or obese and glucose intolerance in children and adolescents. Weiss et al. (2004) report that pediatric metabolic syndrome, which includes obesity, insulin resistance, hypertension, and dyslipidemia, as well as other metabolic abnormalities, is present in 49.7% of all severely obese children. Moreover, the incidence of pediatric metabolic syndrome increased as the weight of the study population increased. The epidemic of childhood obesity and its related health concerns has caused the American Heart Association to issue guidelines, directed toward children, for preventing heart disease (Kavey, Daniels, Lauer, Atkins, Hayman, & Taubert, 2003). These guidelines include restricting high fat foods after the age of two years as well as limiting salt and sugar intake.

According to Birch (1999) and Lino, Gerrior, Basiotis, and Anand (1998) children develop food preferences at an early age, and food preferences learned in childhood will remain with an individual for life. Therefore, children need to be taught healthy food choices at a young age. Moreover, overweight adolescents have a 70% chance of becoming overweight or obese adults, and adult obesity is notoriously difficult to treat (Harlan, 1993; O'Loughlin, Paradis, Renaud, Meshefedjian, & Gray-Donald, 1998; Schonfeld-Warden & Warden, 1997; Office of Disease Prevention and Health Promotion, 2002). It has also been demonstrated that adults who were obese as children and adolescents have a greater risk for morbidity and mortality as adults, regardless of their adult weight (Harlan, 1993; Schonfeld-Warden & Warden).
A majority of children attend school and eat one or more meals a day there, making the school an ideal environment to teach and reinforce healthy eating practices to children. However, Stang, Story, Kalina, and Snyder (1997) as well as Harris et al. (1997) have identified a number of barriers to teaching nutrition education in the schools. Classroom teachers, the individuals usually expected to provide nutrition education in the schools, feel that they lack time, materials, and sufficient education to teach nutrition to students. The majority of food service workers, supervisors, and dieticians also feel that they lack time to provide nutrition education to students. Some food service workers, such as cooks and servers, also feel that they lack adequate education to provide nutrition education (Stang et al.). For these reasons, many children do not receive adequate nutrition education to make a lasting impact on their nutritional practices (Auld, Romaniello, Heimendinger, Hambidge, & Hambidge, 1999).

There is evidence that teaching nutrition education to children improves food choices (Auld et al., 1999; Dollahite, Hosig, White, Rodibaugh, & Holmes, 1998; Harris et al., 1997; Resnicow, 1993; Story et al., 2000; Whitaker, Wright, Koepsell, Finch, & Psaty, 1994; James, Thomas, Cavan, & Kerr, 2004). It has been demonstrated that nutrition education leads to a reduction in weight over a short period of time (James et al.). It has not been demonstrated that this short term weight loss will lead to a reduction of obesity over the life span. It is reasonable to assume, however, that increased nutrition education may have a lasting impact on an individual’s food choices across their lifespan, such that obesity is
Registered nurses receive nutrition education as part of their nursing curriculum. Advanced practice nurses are taught how to counsel patients on health maintenance, including attaining and maintaining a healthy weight. Nurses, therefore, are the logical professionals to assume the role of nutrition education in the school. James et al. (2004) suggest that “health educators” may implement their chosen intervention in the school setting. The literature, however, makes no specific mention of the role that nurses can play in school based nutrition interventions.

Statement of Purpose

Nurses are the logical professionals to plan and implement school based nutrition education, and in the future may increasingly be called upon to do so. As such, a study to assess the feasibility of nurse implemented nutrition education is warranted. There are, however, no existing tools to study this problem. The investigator, therefore, developed two questionnaires to be given to school nurses and administrators. The questionnaires are designed to elicit opinions and information regarding the role of school nurses in teaching nutrition education. The purpose of this study is to validate the content of these questionnaires.

Identification of Nursing Conceptual/Theoretical Framework

Dorthea Orem's Self-Care Deficit Theory was chosen as the theoretical framework for this study because Orem views the nurse as a helping or a change
agent. A helping or a change agent is an individual who uses his or her knowledge or skill to increase the ability of an individual to meet his or her self-care demands. This includes the demand for the maintenance of appropriate intake of food. Since this project seeks to describe the role of the nurse in teaching nutrition education, Orem’s theory is closely aligned with the purpose of this study.

Significance

Schonfeld-Warden and Warden (1997) estimate that the economic cost of adult obesity in the United States in 1990 was $68.8-billion. Additionally, they state that another $33-billion was spent on weight reduction products and services. This cost increased to $117-billion in the year 2000 (Office of Disease Prevention and Health Promotion, 2002). Finkelstein, Fiebelkom, and Wang (2004) conducted an analysis of taxpayer funded medical costs related to obesity. It was found that taxpayers pay 75 billion dollars per year, about $175 per person, for obesity related medical problems through Medicare and Medicaid programs. Furthermore, the state of Ohio ranks seventh in the nation, with 6.1% of its medical spending or 3.3 billion dollars going to obesity related health problems (Finkelstein et al.). Schonfeld-Warden and Warden (1997) also found that obesity is the cause of 300,000 deaths each year in this country, as well as being a major contributor to morbidity, disability, and missed work days. Lakdawalla, Bhattacharya, and Goldman (2004) noted that obese individuals are more likely to be disabled, and disabled at a younger age, than non-obese
individuals. They estimate that obesity costs United States companies more than 12 billion dollars per year in medical costs and lost productivity. Wang and Dietz (2002) examined the changes in obesity related diseases and their related economic costs in children 6-17 years old. Using a multi-year data file of the National Hospital Discharge Summary, Wang and Dietz determined that from 1979-1981 to 1997-1999 discharges for diabetes in this youthful population nearly doubled, from 1.43% to 2.36%. Discharges for obesity tripled in this population from 0.36% to 1.07%. Furthermore, obesity associated annual hospital costs in this population increased from $35 million in 1979-1981 to $127 million in 1997-1999. Clearly, obesity is having a major impact both on the health of our children, and on skyrocketing health care costs. Therefore, Whitaker et al. (1994) believe that even modest success with school based nutrition interventions may have significant public health consequences. If children can be taught sound, life long nutritional practices while still in elementary school, it may be possible to decrease obesity and its related negative health and economic impact in both the pediatric and adult populations.

Summary

Obesity is increasingly becoming a problem in our society, both in terms of health impact and economic costs. Obesity in the pediatric population is especially concerning, not only because it has a significant impact on the health of the pediatric population, but also because obese and overweight children tend to become obese adults. Nutrition education in the elementary schools, often
taught by teachers, does not seem to be effective in decreasing obesity in the
school aged population. There may be a role for school nurses in teaching
nutrition education in the schools, but that role has not been adequately
investigated or described. The purpose of this study is to validate two
questionnaires, developed by the investigator, that are designed to gather
information that will describe the role of the nurse in teaching nutrition
education in the elementary school.
Chapter II

Literature Review

This chapter introduces the reader to a conceptualization of this research study as based on Orem's Self Care Deficit Theory. A diagram of the relationship between variables is provided. A review of the literature related to this study is presented.

Nursing Conceptual or Theoretical Framework

Orem's Self Care Deficit Theory (Orem, Taylor, & McLaughlin Renpenning, 2001) was selected as the theoretical framework for this study. The major concepts of this theory fit well with the purpose of this study.

Orem believes that healthy adults have developed the power and ability to care for themselves (Orem et al., 2001). She describes this ability as self-care which she defines as “the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being” (Orem et al., p.43). Orem states that individuals perform self-care in order to meet eight universally required goals. She calls these goals universal self-care requisites, that are defined as “formulated and expressed insights about the kinds and sequence of action that are known to be necessary or hypothesized to have validity in individuals’ regulation aspects of their own functioning, development, or well-being as they live day to day in stable or changing environments” (Orem et al., p.47). The requisites are: (a) maintenance of sufficient intake of air; (b) maintenance of sufficient intake of water; (c) maintenance of sufficient intake of
food; (d) provision of care associated with the elimination process and excrements; (e) maintenance of a balance between activity and rest; (f) maintenance of a balance between solitude and social interaction; (g) prevention of hazards to human life, human functioning, and human well being; and (h) promotion of human functioning and development with in social groups in accord with human potential, known human limitations, and the human desire to be normal (Orem, et al.).

Orem refers to persons who perform care as a agents, whom she defines as “the person taking action” (Orem et al., 2001, p.43). These individuals may be either self-care agents, defined as “the provider of self-care” (Orem et al., p.43), or dependent-care agents, defined as “the provider of infant care, child care, or dependent adult care” (Orem et al., p.43).

The ability and willingness of an individual to perform self-care is referred to by Orem as self-care agency. Self-care agency is defined as “the complex acquired capability to meet one’s continuing requirements for care of self that regulate life processes, maintains or promotes integrity of human structure and functioning and human development, and promotes well-being” (Orem et al., 2001, p. 254). Likewise, dependent-care agency is defined as “the complex acquired ability to incorporate knowing and meeting health-deviation self-care requisites of infants and children and needed adjustments in universal and developmental self-care requisites into ongoing systems of infant care, child care, and parenting activities” (Orem et al., pp. 284-285). At times, however, individuals may not be
able to perform self-care/dependent-care due to limitations in their knowledge or their health. Orem refers to this inability as a self-care or dependent-care deficit, which she defines “a deficit relationship between what persons should do and what they can or will do” (Orem et al., p. 53).

Orem defines nurse as “a person who is trained to be skilled in specialized types of helping situations” (Orem et al., 2001, p. 54). Orem believes that the role of the nurse is to assist individuals with self-care or dependent-care deficits in performing those activities that are necessary to care for themselves or others. The nurse accomplishes this task through helping methods, which Orem defines as “a sequential series of activities, which, if performed, will overcome or compensate for the health associated limitations of persons to engage in actions to regulate their functioning and development” (Orem et al., p. 55). According to Orem there are five methods of helping. These include (a) acting for or doing for another, (b) guiding or directing, (c) providing physical or psychological support, (d) providing and maintaining an environment that supports personal development, and (e) teaching.

In a school environment, the school nurse can act as helping agent for the students (self-care agents). For example, when using the helping method of teaching, the nurse can instruct students in how to make healthy food choices both from the foods offered on the school menu and from those they encounter outside the school environment. It is anticipated that this instruction will increase the students’ self-care agency in meeting their universal self-care requisite for
sufficient intake of food.

Using the helping method of guiding and directing, the nurse may also be able to assist parents in their role as dependent care agents. Parents can be made aware of the healthier choices on the school menus, and the nurse can suggest that they should teach their children to select the healthier foods. Suggestions can also be made regarding how to incorporate healthier foods into family meals. In some cases, parents may not be aware that the child has a weight problem. In those instances, the nurse may make the parent aware of the problem, and the potential health consequences, as well as suggesting interventions. If the nurse's advice is acted upon, it will increase the dependent care agency of the parents in helping the students to meet the universal self-care requisite of sufficient intake of food. Figure 2 illustrates the relationship between the nurse, the self-care and dependent-care agents, and the universal self-care requisite of adequate intake of food.
Literature Review

Numerous studies have shown that both adult and pediatric obesity is on the rise in North America (Harlan, 1993; O’Loughlin et al., 1998; Schonfeld-Warden & Warden, 1997). The increase in obesity is concerning, as it has been widely demonstrated that obesity contributes to a number of diseases including type 2 diabetes, hypertension, hyperlipidemia, hyperuricemia, cardiovascular/cerebrovascular disease, and certain malignancies. Obesity is a major cause of morbidity and mortality (Hanley et al., 2000; Harlan; Schonfeld-
Weiss et al. (2004) studied the prevalence of the metabolic syndrome in 439 obese (BMI > 97 percentile for age and sex) children and adolescents between 4-20 years of age. It should be noted that the metabolic syndrome includes obesity, insulin resistance, hypertension, type-2 diabetes, and dyslipidemia, as well as other metabolic abnormalities. Metabolic syndrome has been associated with an increase risk of atherosclerotic cardiovascular disease in adults. Twenty non-obese siblings and thirty-one overweight siblings of the obese subjects were also studied for comparison. The children and adolescents in the study were classified as having metabolic syndrome if they met three or more of the following criteria for age and sex: BMI greater than the 97 percentile, a triglyceride level greater than the 95 percentile, HDL cholesterol less than the 5 percentile, systolic or diastolic blood pressure greater than the 95 percentile, and impaired glucose tolerance. The investigators found that 49.7% of the severely obese subjects had the metabolic syndrome, and 38.7% of the moderately obese subjects had the syndrome.

Pediatric obesity is of special concern for a variety of reasons. Investigators have shown that pediatric obesity is related to depression, low self esteem, and poor body image as well as increased morbidity and mortality in children (Hanley et al., 2000; Harris et al., 1997; Nader, 1993; Rocchini, 1993). It has been demonstrated that overweight children tend to become overweight adults (Harlan, 1993; O'Loughlin et al., 1998; Schonfeld-Warden & Warden,
Treating obesity in adults is notoriously difficult. Schonfeld-Warden and Warden have shown that less than 5% of adults who lose weight are able to maintain the loss for five years, and approximately 62% regain all of their lost weight. Lino et al. (1998) report that poor eating patterns developed in childhood tend to carry over into adulthood and are major factors in the increasing prevalence of adult obesity. Furthermore, longitudinal studies have shown that being overweight both as a child or adolescent correlates with higher mortality as an adult, regardless of adult weight (Harlan).

In light of this information, controlling childhood obesity is becoming an increasingly important issue. A number of studies have been done both to identify the causes of childhood obesity, and to evaluate the effectiveness of various interventions on childhood obesity.

**Obesity Demographics and Causes**

Current evidence indicates that the causes of childhood obesity are multifactoral. Birch (1999) reviewed the literature concerning the development of food preferences. She concluded that humans are genetically predisposed to prefer sweet, salty, and "energy dense" foods, and to reject foods that are unfamiliar. During much of human history, when food was relatively scarce and unfamiliar foods could prove to be harmful, these preferences served to increase an individual's chance of survival. In the United States today, however, foods that are high in sugar, salt, fat, and total calories are readily available. This leads to an environment that Birch describes as "obesigenic".
Bowman, Gortmaker, Ebbeling, Periera, and Ludwig (2004) demonstrated that the consumption of “fast food”, so prevalent in our society, can contribute to overweight and obesity in the pediatric population. The investigators reviewed data from the United States Department of Agriculture’s Continuing Survey of Food Intake by Individuals (CSFII) 1994-1996, and the Supplemental Children’s Survey conducted in 1998. They reviewed data provided either by children or by the children’s proxies if the children were unable to report for themselves due to age or disability. The proxies were adult household members who were responsible for preparing the child’s meals. Data on 6212 children aged 4-19 years old was reviewed. The investigators found that on a typical day 1720 children, or 30.3% of the total study population, consumed “fast food”. When those children who consumed “fast food” were compared with those children in the study who did not consume “fast food”, it was found that the children who ate “fast food” consumed 63 kcal more per day in 4-8 year olds, 132 kcal more per day in 9-13 year olds, and 379 kcal more per day in 14-19 year olds. Furthermore, it was found that the children who ate fast food also consumed more total fat, more saturated fat, more total carbohydrate, more added sugars, more sugar sweetened beverages, less fluid milk, fewer fruits, and fewer non starchy vegetables than the children who did not consume “fast foods”. Additional analysis, using the children as their own controls, showed that the children consumed 126 kcal more per day on the days that they ate “fast food” compared to the days that they did not consume “fast food”.
Various ethnic and socio-demographic characteristics also contribute to obesity in children. O'Loughlin et al. (1998) studied 2108 elementary school children in 24 inner city schools located in low income, multi-ethnic neighborhoods in Montreal, Canada. They found that 35.2% of boys, and 33.0% of girls were overweight and 15.1% of boys, and 13.3% of girls were obese according to body-mass index (BMI) and triceps skin fold thickness. Boys of European, Central American, and Caribbean family of origin were more likely to be overweight or obese, as were boys who spent a greater a percent of their life in Canada. The boys' food choices and infrequent physical activity among the boys' mothers were also associated with overweight ($p < 0.10$). Among girls, the factors that contributed to being overweight ($p < 0.10$) were (a) having mothers who smoked, (b) watching more television, (c) playing more video games, (d) consuming a high amount of "junk" food, and (e) having fathers with a high BMI. There was an association with being overweight ($p < 0.10$) in those children (both boys and girls), who had a history of smoking and whose parents had an elevated BMI.

Hanley et al. (2000) studied the prevalence of pediatric obesity in a Native American population living in Canada. This particular population had high rates of adult obesity and type 2 diabetes. These authors found that 27.7% of boys and 33.7% of girls in this population were overweight. Greater amounts of television viewing were associated higher BMI. In subjects who reported watching five or more hours a day of television, there was a 2.5 fold greater risk of being
overweight than in subjects that watched two or less hours a day. The investigators also reported an inverse association between vegetable consumption and weight, although not statistically significant.

Kumanyika (1993) studied the prevalence of obesity in different ethnic groups across the life-span. In this study, she found that approximately 25-60% of young to middle-aged African-American and Hispanic women are overweight. Among native Hawaiians in some age groups, 50-84% were found to be overweight. Among school aged children, Kumanyika found a high occurrence of obesity among Native Americans, and a slightly higher occurrence of obesity among African-American and Hispanic children than among White children. Twenty three percent of Native-American and Hmong pre-school children were found to be obese. Ten to 30% of African-American, Hispanic, and Native American pre-schoolers were found to be overweight, with the percentages varying among different subgroups.

The USDA Center for Nutrition Policy and Promotion found that the children who were most likely to be overweight had one or both parents who were overweight or obese, lived in smaller families, were poor, consumed a high proportion of their daily caloric intake from fat, and were avid television watchers (Anand, Basiotis, & Klein, 1999). Although they did not find race or ethnic origin to be a factor in obesity, they did find that African-Americans had the poorest quality diet of any ethnic group in the United States, especially with regards to milk and fruit consumption (Basiotis, Lino, & Anand, 1998).
There is evidence that family dynamics also affect overweight and obesity in childhood. Agras, Hammer, McNicholas, and Kraemer, (2004) conducted a prospective study 150 children from birth to 9.5 years of age. They assessed multiple hypothesized risk factors for childhood obesity. They found that parental obesity, lower socio-economic status, low parental concern regarding the child’s thinness, highly emotional temperament in the child, higher birth weight, and rapid growth during the first few months of life were all associated with overweight and obesity in children. Children aged two to five years old who had persistent temper tantrums over food, and children who had fewer hours of daytime sleep at 3-4 years of age also were found to be more prone to overweight and obesity.

Chartier (2004) reported that a number of environmental factors have been identified that are believed to contribute to the rise in childhood obesity. They include fewer gym classes and after-school athletic programs, increased availability of soda and snacks in public schools, increasing number of “fast food” restaurants, the trend towards “super-sizing” food portions in restaurants, and increasing number highly processed, high calorie, and high fat grocery products. Chartier further reported the media may also be responsible for contributing to childhood obesity by “promoting poor nutritional choices and unhealthy eating habits”.

**Interventions**

Numerous studies have been conducted to determine the effectiveness of
various interventions on childhood obesity. Many of these studies have been conducted in a school setting; Resnicow (1993) observed, "No other public institution has as much continuous and intensive contact with children during their first two decades of life." Stang et al. (1997) report that over 95% of American children between the ages of five and seventeen are enrolled in school, and most school children consume one or two meals per day at school. According to Stang et al., approximately 6-million U.S. children receive school breakfasts, and 26-million children receive school lunches each day. Harris et al. (1997) reported that approximately 60% of U.S. school children participate in school lunch programs. They report that these children receive more than one third of the recommended dietary allowances for food energy and key nutrients at school. For these reasons, schools are the ideal place to institute interventions aimed at controlling childhood obesity, and to study the effectiveness of these interventions.

Most of the studies reviewed involved modifying school lunches, providing nutrition education, and increasing physical activity. A few included some parental involvement. Parental involvement in school based intervention programs is considered desirable. Even though having obese parents greatly increases a child's chance of being overweight or obese, Schonfeld-Warden and Warden (1997) demonstrated that parental involvement in a child's weight loss efforts improves outcomes for the child even though the parents may remain overweight.
Whitaker et al. (1994) studied all the students who bought their lunch at school in the 16 elementary schools in Bellevue, Washington, USA. An average of 2445 students per day participated in this study. In all of the schools, one lunch menu entree per day was low in fat. After a five month baseline period, the monthly menus, which were routinely sent home to the parents in all of the schools, were changed in eight designated intervention schools to indicate the low fat entree and to compare the fat content of both entrees. An informational pamphlet on dietary fat and a letter describing the menu changes, and requesting that parents encourage their children to select the low fat entrees, was also sent home to parents in the intervention schools. Before the intervention, there were no significant differences between the intervention and the control schools in the number of students who selected the low fat entrees (31.5% versus 30.8%). During the intervention, students in the intervention schools increased their selection of low fat entrees compared to students in the control schools (35.5% versus 32.2%, \( p = 0.03 \)). Although this intervention resulted in only a moderate increase in the selection of low fat entrees, it is easy to implement and readily generalizable. Given the large number of students who participate in school lunch programs, if simple interventions such as these were implemented on a wide spread basis, the potential impact on children’s health could be substantial.

Dollahite et al. (1998) studied a total of 930 elementary school students in grades kindergarten through five in two communities located in an impoverished, rural area of Arkansas. The target population consisted of 548
students in one community, and the control population consisted of 382 students in the other community. In both communities, approximately 85% of the students qualified for free or reduced price school lunches. Interventions consisted of a school based nutrition curriculum, revised lunch menus, nutrition messages in the cafeteria, parental attendance at lunch, and the dissemination of nutrition information to the parents, both through the school and the community. Using instruments developed for the study, pre and post tests were administered to assess the nutrition knowledge and food choices of the children and their parents. Diet related beliefs of the parents were also assessed. At the intervention school, students showed a significant gain in knowledge between the pre and post tests ($p < 0.001$) for second and third graders, and knowledge increased as well ($p < 0.01$) for fourth and fifth graders. There was no change in knowledge for students at the control school. There was no change in food choice behavior for second and third grade students at the intervention school, however a significant improvement ($p < 0.001$) was noted in the food choice behavior of the fourth and fifth grade students. No change in food choice behavior was noted at the control school. There was no change noted in parental nutrition knowledge and diet related beliefs for either the intervention or the control groups. There was however, significant improvement ($p < 0.05$) in food choice behavior for parents in the intervention group compared to those in the control group.

Harris et al. (1997) studied fourth and fifth grade students in one urban and one rural community in Kansas. In the urban setting, the fourth grade
students at one elementary school in the community (n=74) received the intervention while the fourth grade students at the other two elementary schools in the community served as controls. In the rural setting there was only one elementary school, so all fifth graders (n=34) received the intervention. There was no control group in the rural setting. The intervention instituted included reducing fat content in school lunches from approximately 38% to 30% of total calories, instituting a behavioral oriented-activity based nutrition curriculum that focused on teaching healthy food choices, and enhancing opportunities for physical activity by installing classroom fitness stations and modifying physical education classes. By modifying the school menus, the investigators were successful in reducing fat in school lunches. They found that the students nutrition attitudes and knowledge increased significantly from 71% pre-test to 84% post-test ($p \leq 0.0001$) for fifth graders, and from 72% to 74% for fourth graders who did not receive the intervention to 82% for fourth graders who did receive the intervention ($p \leq 0.0001$). In the rural setting, fitness level increased from 18% pre-test to 29% post-test. However, this difference was not found to be statistically significant. In the urban setting, where fitness was tested based on an endurance run, differences in times between intervention and control students was significant for both boys ($p = 0.033$), and girls ($p = 0.012$).

Story et al. (2000) examined students in ten intervention and ten control schools in St. Paul, Minnesota. The intervention began when children entered the fourth grade and continued through the fifth grade year. The goal of the
investigators was to increase the consumption of fruits and vegetables among the students. Interventions included classroom curriculum, parental involvement, school food service changes, and food industry support. It was found that overall fruit and vegetable consumption increased in the intervention schools, with vegetable consumption increasing for girls but not for boys.

James et al. (2004) studied 644 children aged 7-11 years in six primary schools in Southwest England. The study took place over one school year between August, 2001 and October, 2002. Children in fifteen classes were presented with a focused educational program aimed at reducing consumption of sugared, carbonated soft drinks. Children in fourteen classes served as a control and were not presented with the program. Height, weight, and waist circumference of all the children were measured at intervals of six months. The children were also asked to complete a diary of soft drink consumption over a three day period at the beginning and at the end of the trial. While there was no significant change in the children’s BMI after twelve months, the mean percentage of overweight and obese children increased by 7.5% in the control group, and decreased by 0.2% in the intervention group. Likewise, soft drink consumption was less in the intervention group than in the control group (mean difference 0.7%).

**Barriers**

The literature shows that school based interventions are generally effective tools for changing the nutritional knowledge and behavior of children.
There are, however, barriers to the implementation of effective school based interventions.

Stang et al. (1997) interviewed 628 school food service personnel to determine whether or not changes have been made to school menus to meet U.S. Dietary Guidelines, to identify self perceived barriers to such change, to identify self perceived training needs of school food service staff, to determine the amount and type of nutrition education provided by food service personnel, and to identify self-perceived barriers to providing nutrition education. The majority of food service workers reported making changes to the school lunch menu to comply with U.S. Dietary Guidelines. Fifty one and one third percent of food service directors and 51.1% food service managers also reported that their menus were monitored for compliance. The five most commonly cited reasons for not making changes were poor student acceptance of low fat and low sodium food items (39.8%), higher cost of low fat, low sodium fresh foods (31.3%), lack of preparation time (18.4%), inability to include commodity foods in low fat, low sodium menus (16.0%), and lack of training (9.6%).

Although 61.1% of food service directors and 60.2% of managers believed that nutrition education was an important part of their jobs, 83.2% of directors and 88.2% of managers stated that they did not have enough time to provide nutrition education. Thirty nine percent of directors and 48.9% of managers stated that they were not required to teach nutrition, and 44.5% of both groups felt that they did not have enough training to teach nutrition. More than half of
both groups (53.1% of directors and 57.1% of managers), however, did report working cooperatively with teachers to provide nutrition education (Stang et al., 1997).

Teachers also perceived barriers to the implementation of school based nutrition interventions. Classroom teachers are usually expected to provide nutrition education, yet many believe they are lacking in sufficient nutritional knowledge to perform the task. In a process evaluation of their study, Dollahite et al. (1998) reported that teacher adherence to the provided nutrition curriculum varied from 12-89% (mean 49%). Not surprisingly, the teacher who reported the greatest dissatisfaction with the curriculum also reported the least adherence to it (Dollahite, et al.) .

Auld et al. (1999) compared two school based nutrition curriculums. One curriculum consisted of 24 lessons taught exclusively by special resource teachers (SRTs), and the other curriculum, a modified version of the first, consisted of 16 lessons taught alternatively by the SRT and the classroom teacher. Both curricula were found to be successful in improving fruit and vegetable consumption and increasing students' nutritional knowledge when compared to a control group. However, the curriculum taught exclusively by the SRTs was more successful than the curriculum taught by both SRTs and classroom teachers. The teachers believed that the SRTs were more effective because they possessed greater knowledge of nutrition. Many classroom teachers reported that prior to participation in the study, they provided little nutrition education to
their students. Common barriers to teaching nutrition identified by the teachers included lack of time, lack of training, insufficient materials, and lack of administrative support.

In order to overcome these obstacles, Auld et al. (1999) recommended that school systems employ "health specialists" to ensure the ongoing and effective nutrition education necessary to make lasting changes in students' nutritional behavior. They acknowledged, however, that the cost of hiring specially trained teachers would be prohibitive in many school systems.

Although barriers to implementing school based interventions exist, the problem of pediatric obesity is serious enough to warrant finding a way to surmount them. Nader (1993) recommended a broad approach of promoting healthy food and activity choices for children, along with fostering more self-acceptance and positive attitudes that would increase a student's self confidence and self-esteem. He further asserted that goals should not be directed toward weight management but toward making healthy life-style choices.

Role for Nurses

Traditionally, school nurses have assessed growth patterns, including obesity, of elementary school children. It is not clear, however, whether the school nurses use this information for tracking obesity trends to plan nursing interventions.

Registered nurses receive some nutrition education as part of their nursing curriculum. Advanced practice nurses are taught how to counsel
patients on healthy weight, appropriate food choices, and adequate exercise. Nurses also possess unique problem solving skills that would allow them to overcome many of the perceived barriers to the implementation of school based nutrition interventions. Since most school systems already employ nurses in some capacity, it would not be necessary to hire new personnel to teach nutrition if nurses were able to incorporate nutrition education into their role. Surprisingly, the literature makes no mention of nurses as agents in implementing school based nutrition interventions.

The paucity of school nurses may also contribute to the lack of nursing involvement in the implementation of school based nursing interventions. Resnicow (1993) pointed out that although the American Nurses Association recommends one nurse for every 750 regular students, few states comply with this recommendation. Resnicow further stated that most schools, and elementary schools in particular, do not have a full time nurse, and that nurse to student ratios of 1:3000 are not uncommon. With such high nurse to student ratios, it would seem that school nurses have little time to take on the added responsibility of nutrition education. Children, however, are increasingly relying on schools for their primary health care. Kaplan et al. (1998) revealed that the number of school based health centers in the United States increased from forty in 1985 to greater than 900 in 1996. As school based health centers, staffed primarily by advanced practice nurses and registered nurses, become more common it may be possible that nurses will become increasingly responsible for
implementing and monitoring the effectiveness of school based nutrition interventions. It is important, therefore, to assess the feasibility of using nurses to teach nutrition education in schools.

Summary

Obesity is a problem with far reaching health and economic consequences. Because obese children tend to become obese adults, and because adult obesity is difficult to treat, several studies have been conducted to determine the causes of childhood obesity. It has been found that the ready availability of high fat, high calorie foods, along with a number of socio-demographic factors, contributes to the prevalence of obesity in our society, especially among minority populations.

Schools are seen as an ideal place to implement and to test the effectiveness of nutrition interventions. For this reason, a number of studies involving various nutrition interventions have been conducted in the school setting. While most of this research has shown positive results, a number of barriers to the implementation of school-based nutritional interventions have been identified by both teachers and food service personnel. Two major barriers mentioned by both of these groups are lack of time and lack of training to teach nutrition curriculum to students.

The literature makes no mention of the potential role of nurses in school-based nutrition education. Nurses are qualified to plan and implement school-based nutrition education, and in the future may be increasingly called upon to do so. A study to assess the feasibility of nurse implemented nutrition education
is warranted.
Chapter III

Method

This chapter will provide the reader with a description of the research design including subjects, material, methods of data collection, and analysis.

Design

A descriptive survey design was utilized for this project. A cohort of nurses with expertise in the field of school nursing were given a questionnaire structured so as to elicit opinions and information regarding the content validity of research tools designed by the author. Since the purpose of this study was to evaluate and validate investigative tools, no control group was utilized.

Subjects

Questionnaires were distributed to school nurses in the Northwest Ohio area who are members of the Northwest Ohio Association of School Nurses. All school nurses in the Northwest Ohio area belonging to the Association of School Nurses during 2004 were eligible to participate. Currently, there are approximately 86 nurses who are members of this chapter. Questionnaires were distributed to the nurses by Ms. Jan Florian RN, who is the current president of the Northwest Ohio Association of School Nurses. Ms. Florian, however, was excluded from the study, since she was responsible for distributing and collecting the questionnaires. Requirements for membership in the Northwest Ohio Association of School Nurses include the following: (a) members must be Registered Nurses; (b) they must have at least a baccalaureate degree, although it
does not need to be in nursing; and (c) they must have school nurse certification through the Ohio Department of Education. Certification is accomplished by completing courses as outlined by the Ohio Department of Education for certification from an approved university. Sample size was dependent upon the number of respondents.

Protection of Human Rights

The study and its procedure was reviewed and found to meet criteria for expedited status by Institutional Review Board at the Medical College of Ohio. The signing of informed consent forms was waived by the Institutional Review Board of the Medical College of Ohio. See Appendix G for official documentation of the Institutional Review Board approval and informed consent waiver.

Materials

Since no previous research had been done exploring the role of the school nurse in teaching nutrition education in the schools, there was not an existing tool present to study this problem. Therefore, the investigator designed questionnaires in order to obtain opinions and information associated with nursing based education of nutrition in grade schools. These questionnaires were assessed for content validity using a third questionnaire, which was also designed by the investigator.

The questionnaires which were evaluated for content validity were designed to be given to school nurses and principals. The first questionnaire that
was evaluated is a Questionnaire for Nurses, (Appendix A) consisting of 18 questions. Questions one through five are designed to obtain demographic data. Questions six through eight are designed to determine what amount of nutrition education is currently taught in a given school, and who is doing the teaching. Stang, et al; (1997) discovered that nutrition education in schools is usually taught by teachers, many of whom feel that they lack sufficient nutritional knowledge to adequately cover the subject. It was also found by Stang, et al. that school dieticians have the nutritional knowledge, but many feel they lack the time and teaching skills to do the job. These questions are designed to determine who, if anyone, currently teaches nutrition education in a given school. If nutrition education is currently being taught by teachers or dieticians, it is possible that they do not feel adequately prepared for the task. Questions 9 through 13 as well as questions 17 and 18 are designed to assess the school nurse’s current role in teaching nutrition education, and to identify perceived barriers to the school nurse teaching nutrition education. Since the purpose of the study for which the questionnaires were designed is to assess the role of school nurses in teaching nutrition education, it is necessary to determine what that role currently consists of. Questions 14-16 are designed to determine whether the school nurse perceives obesity to be a health problem at a given school, whether BMI is currently calculated for the students at a given school, and if so, what is done with the information. Whittaker, et al; (1993 ) believe that even modest improvement in children’s nutritional choices, if incorporated into the
individual’s lifestyle can have a significant impact on that individual’s health over the lifespan. This belief embodies why nutrition education at a young age is so important. If the school nurse does not feel that obesity is a problem for the student population at a given school, or is not aware of the problem due to lack of data collection at a given school, there may be little incentive to adopt changes in the school’s current nutrition education curriculum.

The second questionnaire that was evaluated is a Questionnaire for School Administrators, (Appendix B) which consists of 7 questions. The first five questions are designed to assess the administrators’ knowledge of the schools’ current teaching practices related to nutrition education. As previously mentioned, it is important to assess whether or not the individuals doing the teaching are adequately prepared for the task. It is also important to assess the type and amount of nutrition education, if any, that currently takes place in a given school. Questions 6 and 7 are designed to assess the receptiveness of the administrator to having school nurses teach nutrition education. The cooperation of school administrators is obviously essential if school nurses are to assume an expanded role in teaching nutrition in the schools.

The previous two questionnaires, (Appendices A and B), had content validity evaluated using an Evaluation Questionnaire, (Appendix C) which consists of 11 questions. Questions 1 through 5 are designed to obtain demographic data of the standard type. Questions 6 through 11 are designed to elicit an opinion regarding the effectiveness of the above mentioned
questionnaires. These questions ask whether or not, in the opinion of the evaluators, the above mentioned questionnaires are adequate to gather the following data: (a) to determine the current role of school nurses as nutrition educators, (b) to determine the current nutrition education curriculum in a given school, and (c) to assess the administration’s receptiveness to having school nurses teach nutrition education.

The questionnaires described above were accompanied by a cover letter (Appendix D) explaining the purpose of the questionnaires and requesting the participants’ cooperation in responding to the evaluation questionnaire.

Data Collection

As previously stated, three questionnaires were distributed to school nurses belonging to the Northwest Ohio Association of School Nurses during 2004. The questionnaires that were evaluated consisted of two investigational tools designed by the author to gather information from school nurses and administrators regarding the feasibility of utilizing school nurses to teach nutrition education in the schools. These questionnaires, which can be viewed in Appendices A and B, were evaluated for content validity using an Evaluation Questionnaire which can be viewed in Appendix C. The Evaluation Questionnaire was designed for the purpose of evaluating the content validity of the other questionnaires (Appendices A and B).

The questionnaires were distributed to the school nurses by Ms. Jan Florian, RN, who is the current president of the Northwest Ohio Association of
School Nurses. The questionnaires were delivered to Ms. Florian in person by the investigators. She was then to distribute them to all school nurses currently enrolled in the Northwest Ohio Association of School Nurses using one of two methods. The questionnaires were to be distributed to and collected from members of the Northwest Ohio Association of School Nurses attending the fall 2004 meeting of the Northwest Ohio Association of School Nurses in Toledo, Ohio in person. Ms. Florian was then to distribute and collect the questionnaires by e-mail from members not attending the fall meeting. The questionnaires then were to be returned to the investigators by Ms. Florian in a self addressed, stamped envelope which was to have been provided to her by the investigators. Ms Florian was to expunge all identifiers from the e-mail questionnaires prior to returning them to the investigators. Respondents were to have two weeks from receipt of the questionnaires to respond. Due to an unexpected outcome which occurred during data collection, it was necessary to modify the data collection protocol such that the questionnaires were not distributed by e-mail. A detailed description of this outcome and the subsequent modification of the protocol are provided in Chapter IV.

The questionnaires were accompanied by a cover letter stating that participation in this investigation was voluntary, and individuals could choose not to answer any of the questions. Furthermore, the letter stated that submission of the survey for analysis implied consent to participate in the study. To insure anonymity, individuals were asked not to sign the questionnaires, or to identify
themselves in any way. Distribution and collection of the questionnaires through Ms. Florian, who was to expunge identifiers from the e-mail questionnaires, also was designed to insure anonymity of the participants.

Participants did not receive compensation for participation in the study. They could, however, request to see the data through Ms. Florian, who would forward the request to the investigators. After completion of the study, the data will be stored in a locked file cabinet in the office of the primary investigator for a period of three years.

Assumptions and Limitations

It was assumed that the response rate would be sufficient to assess the tools for content validity. The possibility was considered that since participation in this study was limited to members of the Association of School Nurses, it might not reflect the opinions of school nurses who were not members of the Association.

Data Analysis

The responses to the Evaluation Questionnaire (Appendix C), served as the data set for analysis. Frequency statistics were used to describe the demographics of the group. (questions 1-5). Frequency statistics were likewise used to describe questions requiring a yes or no answer. (questions 5-8) Individual feedback was evaluated for the open ended questions (questions 9 -11), and for any additional comments which were provided. The content of these responses were evaluated for common themes.
Summary

This chapter provided the reader with a description of the research design and collection of data. Subjects were identified and the interview material was introduced. Assumptions and limitations of the study were clarified. Data collection and analysis were discussed.
Chapter IV

Results

In this chapter the sample is described and the representativeness of the sample to the target population is discussed. A modification that was made to the protocol is described as well. Each question of the Evaluation Questionnaire (Appendix C) is presented. Frequency statistics are used to describe the demographics of the sample. Individual feedback to the open ended questions is also presented.

Sample

The potential target population consisted of eighty-six nurses who were members of the Northwest Ohio Association of School Nurses during the Fall of 2004. The questionnaires were distributed to approximately thirty-six attendees of the Fall 2004 meeting of the Northwest Ohio Association of School Nurses. The final sample size for analysis consisted of eighteen returned Evaluation Questionnaires. This sample size represents approximately 50% of the nurses present at the Fall 2004 meeting of the Northwest Ohio Association of School Nurses, or approximately 21% of all current members of the Northwest Ohio Association of School Nurses.

Modification of Protocol

During the process of implementing the methodological protocol, there was an unexpected outcome that necessitated a modification to the existing protocol. Initially, questionnaires were to be distributed in person to those nurses
in the target population who attended the Fall 2004 meeting of the Northwest Ohio Association of School Nurses. The questionnaires were then to be distributed via e-mail to those nurses in this population who did not attend the meeting.

The questionnaires were distributed to those members of the target population who attended the Fall 2004 meeting of the Northwest Ohio Association of School Nurses as planned. Approximately 36 nurses attended this meeting. From this population, eighteen responses were obtained that fit the data collection protocol. In addition to the eighteen responses to the Evaluation Questionnaire (Appendix C), four responses to the Questionnaire for School Nurses (Appendix A), one response to the Questionnaire for School Administrators (Appendix B), and one critique of the Evaluation Questionnaire itself were also returned. These responses were returned despite explicit instructions in the cover letter (Appendix D) to return the Evaluation Questionnaire only.

It was determined that because the questionnaires had been distributed anonymously at the Fall 2004 meeting of the Northwest Ohio Association of School Nurses, it would be impossible to distribute questionnaires via e-mail to other members in an anonymous fashion unless questionnaires were distributed to all members. Furthermore, sending the questionnaires to all members of the Northwest Ohio Association of School Nurses via e-mail could potentially lead to duplicate questionnaires being returned from individuals that completed the
questionnaires at the Fall 2004 meeting. Based on the fact that several respondents at the Fall 2004 meeting failed to follow the instructions provided, the investigators were concerned that some respondents in the e-mail population who were also at the Fall 2004 meeting would return duplicate questionnaires via e-mail, despite being instructed not to do so. Therefore, to avoid the possibility of duplicate responses, it was decided not to distribute the questionnaires via e-mail.

**Findings**

The following responses were obtained to the Evaluation Questionnaire (Appendix C) which was the questionnaire the respondents were instructed to respond to. This questionnaire served as a basis for establishing content validity of Questionnaire for School Nurses and also the Questionnaire for Administrators.

**Demographics**

There were eighteen responses to question number 1, a multiple choice question that asked “What is your highest level of completed education?” This information is depicted in the Table 2.
Table 2

Education of Respondents

<table>
<thead>
<tr>
<th>Degree</th>
<th>Number of Responses (N=18)</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN (AN or diploma)</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>BSN</td>
<td>5</td>
<td>28%</td>
</tr>
<tr>
<td>Baccalaureate (not nursing)</td>
<td>5</td>
<td>28%</td>
</tr>
<tr>
<td>MSN</td>
<td>2</td>
<td>11%</td>
</tr>
<tr>
<td>Masters (not nursing)</td>
<td>5</td>
<td>28%</td>
</tr>
<tr>
<td>PhD (nursing)</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>PhD (not nursing)</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

There were eleven responses to question number 2, “What, if any, other certification do you have?” This represents 61% of the sample. This information is depicted in Table 3.
Table 3

Certification of Respondents

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Number of Responses (N=11)</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>National School Nurse Certification</td>
<td>4</td>
<td>22%</td>
</tr>
<tr>
<td>School Nurse Certification (non specific)</td>
<td>4</td>
<td>22%</td>
</tr>
<tr>
<td>National School Nurse Certification and Ohio</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Department of Education School Nurse Certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching Certification</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Pediatric Nursing Certification</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Question number 3, a multiple choice question that asked “How long have you practiced nursing?” had eighteen responses. All eighteen individuals responded that they have been practicing for 20 or more years.

There were seventeen responses to question number 4, a multiple choice question that asked “How long have you been a school nurse?” These responses are listed in Table 4.
Table 4

*Length of Practice as a School Nurse*

<table>
<thead>
<tr>
<th>Length of Practice</th>
<th>Number of Responses (N=17)</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4 years</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>5-9 years</td>
<td>3</td>
<td>17%</td>
</tr>
<tr>
<td>10-14 years</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>15-19 years</td>
<td>4</td>
<td>22%</td>
</tr>
<tr>
<td>20 or more years</td>
<td>7</td>
<td>39%</td>
</tr>
<tr>
<td>Not a school nurse</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

It should be noted that even though one respondent was not a school nurse, the data for this individual was included because the individual was a Registered Nurse with more than 20 years of nursing experience.

*Content validation of Questionnaire for School Nurses*

There were eighteen responses to question number 5, a yes or no question that asked “Do you feel the enclosed questionnaire is easy to understand?” All respondents answered “yes” to this question. This is depicted in Table 5. It should be noted that the Evaluation Questionnaire did not specify which questionnaire being evaluated was easy to understand. Due to the fact that all of the respondents responded that the questionnaire was short, concise, simple, easy to understand, read and complete, it may be inferred that their answers apply to both questionnaires.
Table 5

<table>
<thead>
<tr>
<th>Question #5 of Evaluation Questionnaire “Do you feel the enclosed questionnaire is easy to understand?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Responses</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

There were eighteen responses to question number 6, a yes or no question that asked “Do you feel that the enclosed Questionnaire for School Nurses is adequate to determine the current role of the school nurse as a nutrition educator?” Sixteen individuals responded “yes” to this question. The two individuals that responded “no” had further comments. This information is depicted in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Question #6 of Evaluation Questionnaire “Do you feel the enclosed questionnaire for school nurses is adequate to determine the current role of the school nurse as a nutrition educator?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Responses</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

Anecdotal comments made to Question #6 of the Evaluation Questionnaire were as follows:

“Questions (are) too basic.”

“Must include type of school due to type of teaching being different… #10 (Question #10 of the Questionnaire for School Nurses [Appendix A]) should include parents as a choice.”
Content validation of Questionnaire for School Administrators

There were fourteen responses to question number 7, a yes or no question that asked “Do you feel that the enclosed Questionnaire for School Administrators is adequate to assess the current nutrition education curriculum in a given school?” Nine individuals responded “yes”, and five individuals responded “no”. Four of the individuals who responded “no” added further comments. This information is depicted in Table 7.

Table 7

<table>
<thead>
<tr>
<th>Question #7 of Evaluation Questionnaire “Do you feel the enclosed questionnaire for school administrators is adequate to assess the current nutrition education curriculum in a given school?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Responses</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>14</td>
</tr>
</tbody>
</table>

Anecdotal comments made to Question #7 of the Evaluation Questionnaire are noted as follows:

“School administrators often are not aware of specifically who’s teaching what in health education.”

“Health is not state mandated, therefore instruction falls through the cracks because it is not tested on proficiency exams.”

“Some (administrators) don’t know where it (nutrition education) goes in (the) curriculum”

“Some principals won’t know (about nutrition education curriculum) but will just fill out (the questionnaire)... need to include a margin of error in
There were fifteen responses to question number 8, a yes or no question that asked “Do you feel that the enclosed Questionnaire for School Administrators is adequate to assess the administrators’ receptiveness to having school nurses teach nutrition education?” Nine individuals responded “yes”, and six individuals responded “no”. Four individuals that responded “no” elaborated further. These responses are depicted in Table 8.

<table>
<thead>
<tr>
<th>Question #8 of Evaluation Questionnaire “Do you feel that the enclosed questionnaire for school administrators is adequate to assess the administrators’ receptiveness to having school nurses teach nutrition education?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Responses</td>
</tr>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

Anecdotal comments made to Question #8 of the Evaluation Questionnaire include:

“School administrators are not always aware of the full scope of school nurse practice.”

“There is no consistency in nutrition education. People are finally looking at the childhood obesity issue and the decrease in physical education. We need to get health curriculum state mandated”.

“Some administrators don’t even know they have nurses.”

“Not enough questions or area for further comments.”
Question number 9 asked the respondents to briefly describe what they liked about the questionnaire. Eight individual responded to this question. All eight responded similarly, stating that they liked the fact that the questionnaire was short, concise, simple, easy to understand, read, and complete.

Question number 10 asked the respondents to briefly describe what, if anything, they would change about the questionnaire, four individuals responded to this question:

“I don’t think I would bother to question administrators.”

“Who are the administrators you are referring to?”

“Ask administrators how often school nurse is in the building and for how long. Ask if they have (school) board hired RNs, health department RNs, or agency RNs. Ask if they have health aides to teach nutrition education.”

“Questions 13 and 18 (Questionnaire for School Nurses, Appendix A) should allow for more than one response.”

Question number 11, the final question, asked the respondents to add any additional comments that they felt were appropriate. Four individuals responded to this question:

“I do classes about nutrition when requested. I don’t have time to do regular nutrition. I do talk about nutrition when I talk about dental health in February, K-3 (kindergarten through third grade).”
“If this is sent to the principal, what incentive do they have to fill it out for you?”

“You could ask the supers (supervisor or administrators) if they think nutrition education is important.”

“It looks very comprehensive and a good way to start a timely concern.”

The responses that were obtained to the Questionnaires for School Nurses and School Administrators (Appendices A and B), as well as the Evaluation Questionnaire (Appendix C) itself, are not included in these findings, as they were not part of the evaluation questionnaire protocol.

**Summary**

In this chapter the sample was described and the representativeness to the target population was discussed. A modification that was made to the protocol was also described. Each question of the Evaluation Questionnaire was presented. Frequency statistics were used to describe the demographics of the sample. Individual feedback to the open-ended questions was also presented.
Chapter V
Discussion

The purpose of this project was to validate the content of two questionnaires designed by the author. The questionnaires were designed to elicit opinions and information regarding the role of school nurses in teaching nutrition education as well as school administrators knowledge of this education. In this chapter the findings are reviewed and compared to the goals of the project. The findings are then discussed in relation to the theoretical framework of the study, which is Orem’s Self Care Deficit Theory, and the literature. Conclusions are presented based on the findings, the limitations of the study are specified, and the implications of the findings to nursing practice are discussed. Finally, recommendations for further research are listed.

Findings

Demographics

The demographics suggest that the respondents are well educated. Fifty six percent have Baccalaureate degrees, and 39% have Masters’ degrees. Likewise, the respondents have many years of experience both in the nursing profession generally, and specifically, as school nurses. Sixty one percent have been school nurses for 15 or more years, and 39% have been school nurses for 20 or more years. This level of expertise makes them well suited to assess the content validity of the questionnaires. The responses indicate that the questionnaires have content validity, with revisions suggested by the
respondents incorporated into the questionnaires before they would be
distributed in future research. This will serve to improve the quality of the data
captured by the questionnaire.

*Relationship to theoretical framework*

The data suggest that there may be a role for nurses in teaching nutrition
education in the school setting. The respondents indicated that they felt there
was a need for a greater emphasis on health education in general in the school
setting. School nurses, acting as helping agents using the helping methods of
guiding, directing, and teaching, are the logical individuals to provide this health
education, both to students, as self-care agents, and to parents, as dependent-care
agents. This education should lead to increased self-care and dependent-care
agency for students and their parents, related to the universal self-care requisite
of food.

The respondents also indicated that there is a perceived problem
involving the relationship between school nurses and administrators. This
perceived problem may be a barrier to school nurses acting as helping agents to
both students (self-care agents) and parents (dependent-care agents). While
Orem (1995) does not specifically address the relationship between nurses and
non-nursing administrators, she does discuss the relationship between nurses
and nursing administration. She states that “No population or subpopulation of
persons in need of nursing can be provided with nursing in the absence of
cooperation between a competent nursing administration and competent nursing
practitioners.” (p. 401). Based on the information gathered from the respondents, the diagrammatic representation of the theoretic conceptualization of the study should be amended to include school administrators. The amended diagrammatic representation is illustrated in Figure 3 below.

Figure 3. Amended diagrammatic representation of the theoretic conceptualization of the study.

*Relationship to the literature*

The literature clearly demonstrates that obesity in general, and childhood
obesity in particular is of increasing concern, both in this country and throughout the world. According to the World Health Organization, more than one billion adults worldwide are overweight and 300 million are clinically obese (Global strategy on diet, physical activity and health, 2005). In the United States, approximately 64% of adults aged 20 and over are overweight or obese (Overweight prevalence, 2004). Moreover, 16% of all children in the United States age 6-19 years are overweight or obese (Prevalence of overweight among children and adolescents: United States, 1999-2002, 2004). The literature also shows that school based health centers are becoming increasingly common. Kaplan et al. (1998) revealed that the number of school based health centers in the United States increased from forty in 1985 to greater than 900 in 1996. These centers are staffed primarily by advanced practice nurses and registered nurses. It is probable, therefore, that school nurses will become increasingly responsible for implementing and monitoring the effectiveness of school based nutrition interventions. The role of the school nurse as an agent in teaching nutrition education, however, has not been explored in the literature.

Numerous studies have found that elementary students respond favorably to nutrition education provided by non-health care individuals, as demonstrated by better food choice behavior, nutrition attitudes, and fitness level (Dollahite et al., 1998; Harris et al., 1997; James et al., 2004; Story et al., 2000; Whitaker et al., 1994). Therefore, it is reasonable to assume that elementary students would respond favorably to nutrition education from health care
providers such as the school nurse.

The findings of this study indicate a perceived problem involving the relationship between school nurses and school administrators. This perceived problem may act as a barrier to school nurses implementing effective nutrition interventions. The literature review denotes perceived barriers to nutrition education by food service directors and food service managers (Stang et al., 1997) and teachers (Dollahite et al., 1998). Furthermore, one of the perceived barriers by teachers included lack of administrative support (Auld et al., 1999). The school nurses surveyed in this study mentioned school administrators, but not teachers or food service workers. Therefore, the relationship between school nurses and school administrators needs to be explored further.

Conclusions

Evaluation of results and outcomes

Several respondents offered valuable suggestions for improving the two questionnaires for school nurses and for school administrators. These suggestions include asking the administrators specific questions about how often and how long school nurses are in their buildings, whether the nurses are hired by the school board, or provided through the health department or an agency, and whether or not health aides are present in the school to teach nutrition education. These questions are significant because they reflect the administrators’ awareness regarding both the presence of, and the quality of school nurses in their buildings. It was also suggested that questions 13 and 18
on the Questionnaire for School Nurses (Appendix A) allow for multiple answers, and one respondent suggested that question 10 on the same questionnaire, which asks “Do you currently provide nutrition education to students?” should include parents as well.

When asked to add additional comments, one respondent suggested that school administrators should be asked whether or not they feel nutrition education is important. Another respondent wondered what incentive the administrators would have to fill out the questionnaire. Still another respondent shared current nutrition education activities, but expressed doubt about finding the time to teach nutrition education on a regular basis.

Limitations

Data for analysis was gathered at a meeting of the Northwest Ohio Association of School Nurses that took place on a weekday evening. Therefore, it is possible that some school nurses from outlying rural areas may have not attended the meeting. The data collected may be biased due to a limited representation of school nurses. In order to capture potential absent rural outliers, e-mail distribution of the questionnaire would be helpful, but the risk of redundancy could not be eliminated. Furthermore, despite the questionnaires being distributed at the meeting, only about 50% of the individuals present completed the questionnaire. Therefore, the responding sample may not reflect the true demographics of the group present. It should also be noted that some individuals chose not to answer all of the questions. Questions requiring a simple
yes or no response or multiple choice questions were answered more frequently than those that required the respondents to write a short answer. This may be due to the fact that the questionnaire was distributed during a dinner meeting, and the respondents were asked to fill out the questionnaire while they ate dinner and listened to the various speakers who were presenting. Thus, the method of distribution may have influenced the completeness of the responses to some questions.

_Problems encountered_

A few unsolicited responses to Questionnaires A, B, and C that did not meet the directions specified in the Appendix D protocol were obtained. Since these responses did not meet the study protocol, they were not evaluated as part of the results of this study. The phenomenon is noted, however, as an example of how directions may be misunderstood by a study population. Ultimately, this phenomenon led to a revision of the study protocol, such that the planned e-mail distribution of the questionnaires was eliminated.

_Unanticipated results_

The responses to the open-ended questions contained in the questionnaires indicated that there is a perceived problem involving the relationship between school nurses and school administrators. Auld et al (1999) also pointed out that lack of administrative support was one of the barriers to teaching nutrition education identified by teachers in their study. The fact that fewer nurses chose to respond to the questions concerning the Questionnaire for
School Administrators may further indicate that some nurses do not feel comfortable evaluating a questionnaire that explores the school administrators’ attitude toward school nurses. This revelation, while unexpected, is significant in that it may indicate a possible barrier to school nurses teaching nutrition education. Based on this information, the theoretical framework of the study was amended to include an interactive relationship between school nurses and school administrators.

Recommendations for improvement

If this study were to be replicated, a revision of the protocol should be made with respect to the collection of data. If the questionnaires were to be distributed in person, as was done with this study, a verbal review of the instructions, with emphasis on the completion of the Evaluation Questionnaire only, prior to the respondents completing the questionnaire might prove helpful. Likewise, affording the respondents a suitable period of time, uninterrupted by distractions, in which to complete the questionnaire, might lead to a better response rate and more complete answers.

Distributing the questionnaires by e-mail only would provide the respondents with more time to complete the questionnaire. This, in turn, might lead to more complete answers. An adequate response rate could not be guaranteed with this method, however. Perhaps, in this case, offering an incentive to the respondents for filling out the questionnaire might improve the response rate.
Implications for nursing education

Kaplan et al. (1998) found that the number of school based health centers in the United States increased from forty in 1985 to more than 900 in 1996. Therefore, an expanding role for school nurses as agents in implementing and monitoring school based nutrition interventions is likely to occur in the future. In order to insure that future nurses are adequately prepared for this role, the curriculum in nursing schools should reflect an increased emphasis on nutrition. Classes both on nutrition in general, and on how to teach principles of nutrition to various age groups should be offered. Likewise, more nutrition based continuing education offerings should be made available to nurses already in practice. Nurses can also lobby for curriculum modifications in the schools that would place a greater emphasis on health and nutrition education.

Implications for nursing practice.

The written feedback that was supplied by the respondents indicates that there is a role for school nurses to teach nutrition education in elementary schools as an intervention to promote health and to reduce and/or prevent pediatric obesity (Dollahite et al., 1998; Harris et al., 1997; James et al., 2004; Story et al., 2000; Whitaker et al., 1994). The feedback also provided valuable insight into the perceived relationship between school administrators and school nurses. The respondents in this study clearly expressed frustration with school administrators. This has implications for school nursing practice, since school nurses may not currently be able to practice as effectively as would be possible if
they had the felt support of school administrators. This perceived lack of support may, in fact, be a barrier to nurses teaching nutrition education in the schools. Perhaps data from future studies could shed light on how to overcome this barrier from the perspective of nursing practice.

**Recommendations for Nursing Research**

The content of the original questionnaires (Appendices A and B) was valid based on feedback to Appendix C. The respondents were approximately 60% Baccalaureate and 40% Masters prepared. The majority had practiced for more than ten years. The majority also responded “yes” to the questions, “Do you feel that the enclosed questionnaire is easy to understand?” and “Do you feel that the enclosed questionnaire is adequate to determine the current role of the school nurse as nutrition educator?” Therefore, the revised questionnaires (Appendices E and F), based on comments from study participants, are suitable for use in a new research study that actually utilizes the tool validated in this study. The Questionnaire for School Nurses and the Questionnaire for School Administrators (Appendices E and F) were amended following the suggestions of the respondents. The amended questionnaires can be distributed to school nurses and school administrators in a future research study. This distribution will provide a larger sample size, and ideally will cover a larger geographical area of Ohio. The feedback from the amended questionnaires will provide additional information regarding the perceived relationship between school nurses and school administrators, and will suggest ways of improving it.
Hopefully, improving this relationship will remove one identified barrier that currently exists to school nurses teaching nutrition education.

Summary

In this chapter the findings of the study were reviewed and compared to the goals of the project. The findings were then discussed in relation to the theoretical framework of the study and the literature. Conclusions were presented based on the findings, and the limitations of the study were specified. Ways of improving the study were suggested. The implications of the findings to nursing practice, nursing education, and nursing research were discussed as well.
References


controlled trial. BMJ USA, 4, 410-413.


schoolchildren in multiethnic, low income, inner-city neighborhoods in Montreal, Canada. *Annals of Epidemiology, 8*, 422-432.


Appendix A

QUESTIONNAIRE FOR SCHOOL NURSES

1. What is your level of nurse licensure? (Please fill in one circle.)
   ① LPN  ② RN (AD or Diploma)  ③ BSN  ④ MSN  ⑤ CNS  ⑥ NP

2. How many credit hours of nutrition education did you receive in your nursing curriculum? (Please fill in one circle.)
   ① NONE  ② 1-3  ③ 4-6  ④ >6  ⑤ NOT SURE

3. In how many schools do you currently practice? __________

4. How many total hours per week are you in the school(s)? (Please fill in one circle per school.)
   School 1: ① 1-10  ② 11-20  ③ 21-30  ④ 31-40  ⑤ >40
   School 2: ① 1-10  ② 11-20  ③ 21-30  ④ 31-40  ⑤ >40
   School 3: ① 1-10  ② 11-20  ③ 21-30  ④ 31-40  ⑤ >40
   School 4: ① 1-10  ② 11-20  ③ 21-30  ④ 31-40  ⑤ >40

5. How many children are enrolled in your school(s)? (If more than one school please specify number in each school.)
   School 1: __________
   School 2: __________
   School 3: __________
   School 4: __________

6. Is nutrition education a formal part of the curriculum in your school(s)? (Please fill in one circle.)
   ① YES  ② NO  ③ DON’T KNOW

7. If the answer to Question 6 is YES, how many hours of education are provided per month? (Please fill in one circle.)
8. If the answer to Question 6 is YES, who currently provides the nutrition education? (Please fill in one or more circles.)

① TEACHERS  ② DIETICIANS  ③ NURSE  ④ NOT SURE

9. How prepared do you feel to teach basic principles of nutrition to elementary school children? (Please fill in one circle.)

① VERY PREPARED
② SOMEWHAT PREPARED
③ NOT AT ALL PREPARED
④ NOT SURE

10. Do you currently provide any nutrition education to students? (Please fill in one circle.)

① YES  ② NO

11. If the answer to Question 10 is YES, what form does it take? (Please fill in all circles that apply.)

① FORMAL LECTURES
② POSTERS
③ HANDOUTS
④ INDIVIDUAL COUNSELING

12. If the answer to Question 10 is YES, how many hours do you spend teaching nutrition education per week? (Please fill in one circle.)

① 0-2  ② 3-5  ③ 6-9  ④ 10 OR MORE

13. If the answer to Question 10 is NO, why not? (Please fill in one circle.)

① NOT ASKED TO
② NOT ENOUGH TIME
③ NOT IN JOB DESCRIPTION
14. Do you feel that the number of overweight or obese children at your school(s) is a significant health problem? (Please fill in one circle.)  
① YES  ② NO  ③ NOT SURE

15. Do you currently conduct height and weight measurements to calculate BMI on your students at least once during the school year? (Please fill in one circle.)  
① YES  ② NO

16. If a student is determined to be overweight or obese (BMI greater than 95th percentile), what, if anything, do you do to intervene? (Please fill in all circles that apply.)

① COUNSEL STUDENT
② INFORM PARENT(S)
③ CONTACT CHILD’S PRIMARY CARE PROVIDER
④ NOTHING
⑤ OTHER (please specify) ____________________________________________________

17. Do you believe educating students about principles of basic nutrition is part of your role as a school nurse? (Please fill in one circle.)  
① YES  ② NO  ③ NOT SURE

18. What possible barriers do you see to school nurses teaching nutrition education? (Please fill in one circle.)

① NOT ENOUGH TIME
② NOT KNOWLEDGEABLE ENOUGH ABOUT TOPIC
③ LACK OF ADMINISTRATIVE SUPPORT
④ OTHER (please specify) ____________________________________________________
Appendix B

QUESTIONNAIRE FOR ADMINISTRATORS

1. Are the principles of basic nutrition taught as part of the curriculum in your school? (Please fill in one circle.)
   ① YES  ② NO

2. If the answer to Question 1 is YES, how many hours per month are devoted to teaching principles of basic nutrition? (Please fill in one circle.)
   ① 0-2  ② 3-5  ③ 6-9  ④ >9

3. If the answer to question 1 is YES, what form does the content take? (Please fill in all circles that apply.)
   ① FORMAL LECTURES
   ② POSTERS
   ③ HANDOUTS
   ④ INDIVIDUAL COUNSELING
   ⑤ OTHER (please specify) ________________________________

4. Who teaches nutrition education in your school? (Please fill in all circles that apply.)
   ① TEACHERS
   ② DIETICIANS
   ③ SCHOOL NURSES
   ④ OTHER (please specify) ________________________________

5. Have the individuals who teach nutrition in your school had nutrition classes as part of their formal education? (Please fill in one circle.)
   ① YES  ② NO  ③ DON’T KNOW

6. Do you believe that educating students about principles of basic nutrition is part of the school nurse’s role in your school? (Please fill in one circle.)
   ① YES  ② NO  ③ DON’T KNOW

7. What possible barriers do you see to school nurses teaching nutrition education in your school? (Please fill in all circles that apply.)
① NOT ENOUGH TIME
② NOT PART OF SCHOOL NURSES JOB
③ OTHER (please specify) ________________________________
Appendix C

EVALUATION QUESTIONNAIRE

1. What is your highest level of completed education? (Please fill in one circle.)
   - RN (AD or Diploma)
   - BSN
   - Baccalaureate degree (not nursing)
   - MSN
   - Masters (not nursing)
   - PhD in nursing
   - PhD (not nursing)

2. What, if any, other certification do you have?
   __________________________________________

3. How long have you practiced nursing? (Please fill in one circle.)
   - 1-4 Years
   - 5-9 Years
   - 10-14 Years
   - 15-19 Years
   - 20 or more Years

4. How long have you been a school nurse? (Please fill in one circle.)
   - 1-4 Years
   - 5-9 Years
   - 10-14 Years
   - 15-19 Years
   - 20 or more Years

5. Do you feel that the enclosed questionnaire is easy to understand?
   (Please fill in one circle.)
   - YES
   - NO please elaborate__________________________________________

6. Do you feel that the enclosed questionnaire for nurses is adequate to determine the current role of the school nurse as a nutrition educator? (Please fill in one circle.)
   - YES
   - NO please elaborate__________________________________________

7. Do you feel that the enclosed questionnaire for school administrators is adequate to assess the current nutrition education curriculum in a given school? (Please fill in one circle.)
   - YES
   - NO Please Elaborate__________________________________________

8. Do you feel that the enclosed questionnaire for school administrators is adequate to assess the administrators' receptiveness to having school nurses to teach nutrition education? (Please fill in one circle.)
   - YES
   - NO please elaborate__________________________________________
9. Briefly describe what you liked best about the questionnaire:

10. Briefly describe what, if anything, you would change about the questionnaire

11. Please feel free to add any additional comments that you have:
Appendix D

Dear Nursing Colleague,

My name is Judith Malhotra, and I am a graduate student in the Family Nurse Practitioner program at the Medical College of Ohio. As part of the requirement for completion of my degree, I am working on a scholarly project.

The problem I have chosen to explore is the role of school nurses in regards to teaching nutrition education in the schools. Since this problem has not been studied before, it was necessary for me to design questionnaires, to be given to school nurses and administrators, which will provide information about the role of the school nurse in teaching nutrition education. Before distributing the questionnaires, I would like to get some feedback on whether or not the questionnaires will serve the purpose for which they were designed.

I am requesting that you evaluate the enclosed questionnaires for school nurses and administrators, and then provide me with feedback by filling out the evaluation questionnaire. Please do not fill out the questionnaires for school nurses and administrators. FILL OUT THE EVALUATION QUESTIONNAIRE
ONLY.

To protect your Identity, please do not sign the questionnaire or add any other identifying information. When you have completed the questionnaire, please return it to Ms. Florian, either in person or via e-mail.

Participation is completely voluntary, and you may choose not to answer some of the questions if you wish. Submission of the completed questionnaire for analysis implies your consent to participate in this study.

Thank you for taking the time to complete the evaluation questionnaire. You have 2 weeks from the time you receive the questionnaire to complete and return it.

Sincerely,

Judith Malhotra        Susan L. Pocotte        Sandra Oehrtman
Graduate Student       Assistant Professor     Associate Professor
School of Nursing      School of Nursing       School of Nursing
Medical College of Ohio Medical College of Ohio Medical College of Ohio
Appendix E

AMENDED QUESTIONNAIRE FOR SCHOOL NURSES

1. What is your level of nurse licensure? (Please fill in one circle.)
   ☐ LPN ☐ RN (AD or Diploma) ☐ BSN ☐ MSN ☐ CNS ☐ NP

2. How many credit hours of nutrition education did you receive in your nursing curriculum? (Please fill in one circle.)
   ☐ NONE ☐ 1-3 ☐ 4-6 ☐ >6 ☐ NOT SURE

3. In how many schools do you currently practice? _____________

4. How many total hours per week are you in the school(s)? (Please fill in one circle per school.)
   School 1: ☐ 1-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ >40
   School 2: ☐ 1-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ >40
   School 3: ☐ 1-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ >40
   School 4: ☐ 1-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ >40

5. How many children are enrolled in your school(s)? (If more than one school please specify number in each school.)
   School 1: _____________
   School 2: _____________
   School 3: _____________
   School 4: _____________

6. Is nutrition education a formal part of the curriculum in your school(s)? (Please fill in one circle.)
   ☐ YES ☐ NO ☐ DON’T KNOW

7. If the answer to Question 6 is YES, how many hours of education are provided per month? (Please fill in one circle.)
8. If the answer to Question 6 is YES, who currently provides the nutrition education? (Please fill in one or more circles.)
   ① TEACHERS  ② DIETICIANS  ③ NURSE  ④ NOT SURE

9. How prepared do you feel to teach basic principles of nutrition to elementary school children? (Please fill in one circle.)
   ① VERY PREPARED
   ② SOMewhat PREPARED
   ③ NOT AT ALL PREPARED
   ④ NOT SURE

10. Do you currently provide any nutrition education to students and/or parents? (Please fill in one circle.)
    ① YES  ② NO Specify: Students, Parent, or both __________________________

11. If the answer to Question 10 is YES, what form does it take? (Please fill in all circles that apply.)
    ① FORMAL LECTURES
    ② POSTERS
    ③ HANDOUTS
    ④ INDIVIDUAL COUNSELING

12. If the answer to Question 10 is YES, how many hours do you spend teaching nutrition education per week? (Please fill in one circle.)
    ① 0-2  ② 3-5  ③ 6-9  ④ 10 OR MORE

13. If the answer to Question 10 is NO, why not? (Please fill in all that apply)
    ① NOT ASKED TO
    ② NOT ENOUGH TIME
14. Do you feel that the number of overweight or obese children at your school(s) is a significant health problem? (Please fill in one circle.) ① YES  ② NO  ③ NOT SURE

15. Do you currently conduct height and weight measurements to calculate BMI on your students at least once during the school year? (Please fill in one circle.) ① YES  ② NO

16. If a student is determined to be overweight or obese (BMI greater than 95th percentile) what, if anything, do you do to intervene? (Please fill in all circles that apply.)
   ① COUNSEL STUDENT
   ② INFORM PARENT(S)
   ③ CONTACT CHILD’S PRIMARY CARE PROVIDER
   ④ NOTHING
   ⑤ OTHER (please specify) ____________________________________________________

17. Do you believe educating students about principles of basic nutrition is part of your role as a school nurse? (Please fill in one circle.) ① YES  ② NO  ③ NOT SURE

18. What possible barriers do you see to school nurses teaching nutrition education? (Please fill in all that apply)
   ① NOT ENOUGH TIME
   ② NOT KNOWLEDGEABLE ENOUGH ABOUT TOPIC
   ③ LACK OF ADMINISTRATIVE SUPPORT
   ④ OTHER (please specify) ____________________________________________________

19. What type of school do you practice in? (Please fill in one circle.)
   ① Public  ② Private non-parochial  ③ Private parochial

20. What type of area is your school located in? (Please fill in one circle.)
   ① Urban  ② Suburban  ③ Rural
21. Please feel free to add any additional comments that you have.
Appendix F

QUESTIONNAIRE FOR ADMINISTRATORS

1. Are the principles of basic nutrition taught as part of the curriculum in your school?  
(Please fill in one circle.)  
1. YES  2. NO

2. If the answer to Question 1 is YES, how many hours per month are devoted to teaching principles of basic nutrition? (Please fill in one circle.)  
1. 0-2  2. 3-5  3. 6-9  4. >9

3. If the answer to question 1 is YES, what form does the content take?  
(Please fill in all circles that apply.)

1. FORMAL LECTURES
2. POSTERS
3. HANDOUTS
4. INDIVIDUAL COUNSELING
5. OTHER (please specify) _____________________________________________________

4. Who teaches nutrition education in your school? (Please fill in all circles that apply.)

1. TEACHERS
2. DIETICIANS
3. SCHOOL NURSES
4. OTHER (please specify) _____________________________________________________

5. Have the individuals who teach nutrition in your school had nutrition classes as part of their formal education? (Please fill in one circle.)  
1. YES  2. NO  3. DON’T KNOW

6. Do you believe that educating students about principles of basic nutrition is part of the school nurse’s role in your school? (Please fill in one circle.)  
1. YES  2. NO  3. DON’T KNOW

7. What possible barriers do you see to school nurses teaching nutrition education in your school? (Please fill in all circles that apply.)
1. NOT ENOUGH TIME
2. NOT PART OF SCHOOL NURSES JOB
3. OTHER (please specify) ________________________________

8. How many hours per week is a nurse present at your school? (Please fill in one circle.)
   1. 0-5  2. 6-10  3. 11-15  4. 16-20  5. Greater than 20  6. Not sure

9. Who provides the nurses for your school? (Please fill in one circle.)

10. Do you have health aids who could teach nutrition education in your school? (Please fill in one circle.)
    1. YES  2. NO  3. DON’T KNOW

11. Do you believe that including health and nutrition education in the school curriculum is important? (Please fill in one circle.)
    1. YES  2. NO  3. NOT SURE

12. Please feel free to add any additional comments that you have.
Appendix G

INSTITUTIONAL REVIEW BOARD
Medical College of Ohio
Block Health Science Building - Room 140
3035 Arlington Avenue, Toledo, Ohio 43614-5804
Phone: 419-383-6796  Fax: 419-383-3248
(FWA0007382)

MEMORANDUM

TO: Susan Pocotte, Ph.D.
    Department of School of Nursing
    MCO

FROM: Eric Schau, M.D., Chair
      Daniel Cipriani, Ph.D., P.T., Vice-Chair
      MCO Institutional Review Board

DATE: August 27, 2004

SUBJECT: IRB #104796- Nutrition Education in the Schools. Whose Job is it?

The above project was reviewed and approved by the Chair and Vice-Chair of the Medical College of Ohio Institutional Review Board as an expedited review (category #7). The requirement to obtain informed consent and/or authorization for use and disclosure of protected health information form has been waived, as this research does not include the collection of identifiable health information as defined by the HIPAA Privacy Rule. It was determined that this waiver for informed consent and authorization for use and disclosure of protected health information form at this site will not adversely affect the rights or welfare of the participants. The review and approval includes the questionnaire for school nurses, the questionnaire for administrators, the evaluation questionnaire and the cover letter that explains the research project to potential participants. This approval is in effect until the expiration date listed below, unless the IRB notifies you otherwise. The full board will review this research at its meeting on 09/16/2004.

APPROVAL DATE: 8/27/2004
EXPIRATION DATE: 8/26/2005

It is the Principal Investigator’s (P.I.’s) responsibility to:

1. Abide by all federal, state, and local laws and regulations; the MCO federal assurance and institutional policies for human subject research and protection of individually identifiable health information including those related to record keeping and be sure that all members of your research team have completed the required education in these areas.

2. Promptly notify the MCO IRB at (419) 383-6796 of any untoward incidents or unanticipated adverse events that develop in the course of your research. Please complete and submit RGA Form 317 for ALL SUCH REPORTS for this protocol. The Principal Investigator is also responsible for submitting to the MCO IRB reports of adverse events that occur at other sites conducting this study and for maintaining an up-to-date cumulative table of adverse events (RGA Form 316) and submitting it to the MCO IRB for each research project. The Principal Investigator is responsible for reporting adverse events to the appropriate federal agencies and the sponsor (when one exists).

3. Report promptly to the MCO IRB any deviations or violations from the MCO IRB approved protocol in accordance with the procedures outlined in RGA Form 309. In your report include the protocol number and title, the subject's initials/specimen identifier (as appropriate) and study I.D. number, date of the event, a brief description of the occurrence and a description of any corrective actions taken. The Principal Investigator is responsible for reporting deviations, violations and participant non-compliance to the appropriate federal agencies and the sponsor (when one exists) in accordance with federal regulations, institutional policy and any other legal agreements with these organizations.

4. Obtain prior MCO IRB review and approval for changes in study personnel and for any and all changes/new information that may require additional information be provided to participants.

5. Report promptly to the MCO IRB, sponsor (if this research is sponsored) and all other required federal and state agencies all new information affecting the risk/benefit ratio and obtain prior MCO IRB approval for any changes in the study documents that may be required by the new information.
6. Obtain prior MCO IRB review and approval for all modified and/or added incentives going to the P.I., study coordinator, other study personnel, and/or the institution. These incentives may be in the form of money or other items of value, including, but not limited to, equipment, such as computers, and intangibles, such as frequent flyer miles.

7. Promptly notify the MCO IRB; other required MCO committees, departments or individuals; the sponsor (if this research is sponsored); and all other required federal and state agencies of all potential conflicts of interest before beginning this research and, during the course of this research report to these committees, individuals and agencies any changes that may affect conflict of interest for any of the study personnel. Prior MCO IRB approval must be obtained for any changes in the study documents that may be required by information related to conflict of interest or any changes in this information during the course of the research.

8. Promptly notify the MCO IRB of any changes in contracts, budgets, grants or other agreements with sponsors, agencies or individuals regarding the conduct of this research before initiating these changes. The IRB reserves the right to review the study-related documents and changes to them to verify accuracy and consistency with regard to the research protocol in order to protect the rights and welfare of the study subjects. Changes in these documents that have the potential to affect the rights, welfare or willingness of the study subjects to participate in or continue to participate in this research and changes in subject documents (such as informed consent, assent or authorization for use and disclosure of protected health information forms, etc.) that are a result of these changes must be reviewed and approved by the MCO IRB prior to being instituted.

Additional Information:

- Other Required Review(s) or Approval(s)
  Review or approval by the MCO Institutional Review Board/Privacy Board does not take the place of any other review or approval required by the Medical College of Ohio, non-MCO performance sites, the government and/or the study sponsor.

- Required Procedure to Request Review and Approval for Changes/Updates to MCO IRB Approved Research:
  Please complete and submit the Request for Amendment/Changes/Updates (RGA Form 314 found at <http://www.mco.edu/research/rga_frms/rga314.doc>) with a copy of all materials relevant to the requested change (including consent/assent/authorization for use and disclosure of protected health information forms if applicable) with the changes underlined. If you are requesting review and approval of consent/assent/authorization for use and disclosure of protected health information forms, please attach a clean copy of the revised forms for the MCO IRB to stamp. Please remember that all changes and correspondence submitted to the MCO IRB (regardless if they are generated by a sponsor, the P.I. or requested by the MCO IRB) must be in writing, signed and dated by the Principal Investigator.

- Federally Mandated Continuing Review:
  MCO IRB protocols must be reviewed and reapproved not less than once per year. Research and Grants Administration will try to remind you when reapproval is due. However, it is the responsibility of the Principal Investigator to have his/her own reminder system in place to initiate the re-approval process at least a month prior to the expiration date shown above. Please note that Federal Regulations prohibit the extension of this expiration date. Please see the Application for Continuing Review (RGA Form 319 found at <http://www.mco.edu/research/rga_frms/rga319.doc>) for items required for continuing review.

- Required Final Report Upon Termination of Research:
  When you decide to stop this research, you are responsible for completing and submitting a Final Report (RGA Form 320 found at <http://www.mco.edu/research/rga_frms/rga320.doc>) to the MCO IRB for review.
Abstract

Obesity across the lifespan is becoming an issue of increasing concern. Obesity related health problems often begin in childhood. These problems may possibly be reduced by nutrition education at a young age. The role of the school nurse as a nutrition educator has not been explored. Therefore, a set of questionnaires were designed to gather information regarding this role. These questionnaires were validated by individuals in the Northwest Ohio Chapter of the Association of School Nurses. The questionnaires demonstrate content validity with modifications. Modified questionnaires could potentially be distributed on a greater scale to gather information on school nurse’s and school administrator’s perceptions of nutrition education within the school system. Eventually, information gathered may demonstrate the school nurses ability to participate more fully in teaching nutrition education, by removing barriers that currently impede them. By teaching nutrition at an early age, this major health problem, obesity, may be attenuated.