

5-2014

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An Evaluation of Northwest Arkansas Elementary School Nurses' Perceptions of Their Role in
the Management and Prevention of Obesity

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Abstract

The purpose of this study was to investigate the roles and perceptions of elementary school nurses in the management and prevention of childhood obesity within the school environment. An emailed online survey was distributed to school nurses of 35 elementary schools located in Washington County in Northwest Arkansas. The survey used for this study contained 42 questions and was an adaptation of the Minnesota School Nurse Survey, which was developed by Dr. Martha Y. Kubik. The study sample consisted of all school nurses employed by the Elkins School District, Farmington School District, Fayetteville School District, Greenland School District, Lincoln School District, Prairie Grove School District, Springdale School District, and West Fork School District. The number of complete survey responses was seventeen. Data was analyzed using frequency distribution to examine the prevalence of key variables. Interestingly enough, the majority of nurses surveyed agreed that schools should provide annual assessments of students' weight, height, and body mass index and make that information available to parents, but disagreed that the school nurse has adequate time to supervise and monitor obesity prevention efforts at school. Additionally, since the majority of nurses surveyed disagreed that the school nurse is prepared to supervise and monitor obesity prevention efforts at school, future focus needs to include increased professional development about measures in which the school nurse can participate in to increase obesity management and prevention and increased time and support from the school and healthcare professionals.

An Evaluation of Northwest Arkansas Elementary School Nurses' Perceptions of Their Roles in the Management and Prevention of Obesity

Introduction

School epitomizes one of the most influential environments in a student's life. School nurses are responsible for overseeing health policies and programs, while offering clinical knowledge and judgment in the provision of school health services and promotion of health education. Not only do school nurses provide health care services to students and staff, they also perform health screenings and organize referrals to other healthcare providers. Ultimately, the school nurse is the liaison between school administrators, family, community and healthcare professionals to provide leadership for establishing a healthy school setting (National Association of School Nurses [NASN], 2002).

Nationwide, the rate of children affected by obesity is reaching alarming heights. According to the Center for Disease Control's National Health and Nutrition Examination Survey (2007-2008) approximately 17% (about 12.5 million) of children and adolescents aged 2-19 years are obese. Body Mass Index (BMI) testing is a basic, noninvasive, inexpensive tool used to help identify overweight students or those who are at risk of becoming overweight (Stoddard, Kubik, & Skay, 2008). BMI is calculated as weight in kilograms divided by height in meters squared (kg/m^2). Children with BMI values at or above the 95th percentile of sex-specific BMI growth charts are categorized as obese. According to organizations such as the Institute of Medicine and the American Academy of Pediatrics, elevated BMI among children indicates increased risk for future negative health outcomes or development of diseases (Ogden & Carroll, 2010). Some of these health problems include Type 2 diabetes mellitus, sleep apnea, orthopedic problems, hypertension, dislipidemias, and cardiovascular disease. These physical health issues may result in low-self esteem and depression (Schmidt, 2003). Childhood obesity has gained

significant attention, but policies and programs needed to stop childhood and adolescent obesity are less than favorable, in short supply, or absent (Levy & Petty, 2008).

Due to the rising prevalence of obesity in children and adolescents, this study will assess if current school nursing practice reflects the demand for obesity assessment in school age children. It is crucial to identify factors related to school nurses supporting and providing obesity prevention services. Because school nurses have access to a large population of school age children, they have the potential to have a monumental influence on childhood obesity (Larios & Staggs, 2009).

Background/Significance

In 1999, the Arkansas legislature passed a bill calling for a report on obesity. The Arkansas Department of Health assembled a task force that issued a report and recommendations the following year. In 2001, a bill was approved to increase physical activity in schools. The Arkansas legislature passed Act 1220 in 2003, taking action against the obesity epidemic, which required procedures to prevent and efforts to control the increase in obese children in the public school system. A Child Health Advisory Committee (CHAC) was established to coordinate statewide endeavors to battle childhood obesity and associated health issues to enhance the overall health of Arkansas's population (Arkansas Center for Health Improvement [ACHI], 2004). This act ordered that every public school student in Arkansas must have a yearly body mass index-for-age evaluation with parental notification. Health reports with explanations of BMI-for-age and the potential health complications that could occur with these measurements were delivered to the parents. No funding was allocated with this mandate and data collection became the responsibility of 415 school nurses in Arkansas. Approximately 93% of the schools in Arkansas responded, and valid data was reported for 345,892 students. The United States Centers for Disease Control and Prevention (CDC) criteria for overweight classification noted

that 21% of students assessed met these criteria and an additional 17% of students were at risk for being overweight. Results recorded 38% of students were at a heightened risk for obesity-related diseases in the future. Ethnic differences were identified in Arkansas, with a higher percentage of ethnic minority students categorized as overweight or at risk for overweight. Forty-six percent of Hispanic students and 41% of African American students were in high-risk groups versus 37% of Caucasian students (ACHI, 2004).

The amount of children who are classified as obese has increased significantly over the past three decades, and more than 9 million children above age 6 are classified as obese (Institute of Medicine, 2004). Childhood obesity prevention and management is demanding school nurses, parents, staff, school boards, and communities to seize a more active role. The obtained results from this study will identify and explore school nurses' perceptions of their roles in the management and prevention of childhood obesity. Results of this study may be used to develop interventions intended to advance the health practices of elementary school nurses in Northwest Arkansas.

The purposes of this study were to identify the responsibilities of school nurses in elementary schools in Washington County in the management and prevention of childhood obesity and to assess the nurses' perceptions of their roles. The aims of the study were:

Aim 1: To determine the role of school nurses in Washington county elementary schools in providing obesity prevention services.

Aim 2: To explore Washington county elementary school nurses' perceived role in school-based obesity prevention.

Aim 3: To explore elementary school nurses' perceptions of support from parents, staff, school board, and community in preventing childhood obesity.

Research Design and Methods

This study was conducted after approval by the University of Arkansas Institutional Review Board.

Design. This study was an exploratory cross-sectional descriptive design using a purposive sample of school nurses from the 35 public elementary schools in the Northwest Arkansas region. An exploratory cross-sectional descriptive design measures differences among a variety of subjects at a specific time, rather than measuring a change following an intervention, to make causal inferences based on the findings.

Sample. A purposive sample was used to obtain data collection. The purposive sample was comprised of all school nurses employed by the Elkins School District, Farmington School District, Fayetteville School District, Greenland School District, Lincoln School District, Prairie Grove School District, Springdale School District, and West Fork School District.

Instrument. The survey that was used for this study was an adaptation of the Minnesota School Nurse Survey, which was developed by Dr. Martha Y. Kubik. Permission was granted from Dr. Martha Kubik to create and modify a new questionnaire for this study. The modified version, Northwest Arkansas (Washington County) Elementary School Nurses' Perceptions of Obesity Prevention and Management in Elementary School, contained 42 questions. Thirty-one questions were survey-based and eleven are demographic, divided into five sections. The first section included four questions related to school nurse practices, the second section dealt with child-level obesity prevention tasks and contained nine questions, the third section focused on school-level obesity prevention tasks and contained ten questions, the fourth section had eight questions that looked at perceived support from others, and the fifth section was personal and school demographics and included eleven questions.

Procedure. In January 2014, the school nurses in Washington County were sent an email notification about the distribution of the survey to provide information about the purpose, aims, and data collection methods of this project. The survey was sent electronically through an email link, and by participating in the survey, the school nurses provided their consent and were informed of the confidentiality measures. The following data were collected: year of birth; gender; highest academic degree; racial or ethnic group; years in current position at school location; total years of school nursing experience; and total years of nursing experience. The second set of questions was specific to their existing assignment: number of schools in existing assignment, total number of students appointed to each nurse, location of schools (urban, suburban, rural), and racial/ethnic makeup of students in the school the nurse works.

The survey remained anonymous, so that the participants' right to privacy was protected. Electronic responses from the survey were stored in a password protected computer file. Only comprehensive data was reported and no specific school district data was made public.

Data Analysis Procedures

Data was analyzed using frequency distribution to examine the prevalence of key variables. The first section of questions required yes or no responses. The second and third sections of questions addressing child-level obesity prevention tasks and school-level obesity prevention tasks used a Likert scale with values of 1 = Never, 2 = Rarely, 3 = Sometimes, and 4 = Often. Questions asking for the school nurses' opinions on the support they receive from others within the school setting and the community used a Likert scale containing the values 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, and 5 = Strongly Agree. The final section of questions labeled personal and school demographics provided information that proved valuable to the research.

Results

The following section examines the findings of the study. The first section explores the demographics of the survey participants. The second section looks into the school nursing practices of the surveyed school nurses. The third section reviews child-level obesity prevention tasks. The fourth section examines school-level obesity prevention. The fifth section identifies the school nurses' opinions and support from others and the final section includes a school demographic section.

Demographics

Of the 22 nurses who opened the survey, there were 17 complete responses, and the results showed a wide range of age values through the years 1954 to 1983 as illustrated in Table 1. The mean resulted with the year of 1971, equivalent to the age of 43. The median resulted in 1973, equivalent to the age of 41.

Table 1

Participants' Year of Birth (N = 17)

Year of Birth	Frequency	%
1950-1960	3	17.6
1961-1970	3	17.6
1971-1980	9	53.0
1981-1990	2	11.8
Total	17	100

Of the 22 nurses who opened the survey, there were 17 complete responses, and results indicated that there were 17 female participants. From the 17 respondents, there were 8 (47.1%) with Associate degrees, 9 (52.9%) with Bachelor degrees, 0 (0%) with Masters' degrees, and 0

(0%) with Doctoral degrees. For racial and ethnic categories, respondents were instructed to select all that applied. The largest group of respondents totaled 100%, which represented White/Caucasian, and the lowest was 0% representing Asian, Black/African, and Hispanic/Latino.

Table 2 had respondents with a wide range from less than 6 months to more than 15 years held in the current school nurse position. Table 3 had respondents with a wide range of results of years in school nursing, with an approximate mean of 7 years in school nursing. Table 4 shows a range of 7 to 35 total years of nursing experience, with an approximate mean of 17.5 years.

Table 2

Participants' Years in Current Position (N = 17)

Years in Current Position	Frequency	%
Less Than 6 Months	3	17.6
6 Months-5 Years	7	41.2
6-10 Years	4	23.5
11-15 Years	2	11.8
More Than 15 Years	1	5.9
Total	17	100

Table 3

Participants' Years in School Nursing (N = 17)

Years in School Nursing	Frequency	%
Less Than 6 Months	1	5.9
6 Months-5 Years	9	52.9
6-10 Years	2	11.8
11-15 Years	4	23.5
More Than 15 Years	1	5.9
Total	17	100

Table 4

Participants' Years of Nursing Experience (N = 17)

Years of Nursing Experience	Frequency	%
1-10 Years	2	11.8
11-20 Years	10	58.8
21-30 Years	4	23.5
31-40 Years	1	5.9
Total	17	100

School Nurse Work Load, Setting, and Racial/Ethnic Composition

The majority of the nurses surveyed 88.2% ($N = 15$) was responsible for one school. Two nurses surveyed (11.8%) were responsible for two schools. The majority 58.8% ($N = 10$) of respondents indicated that they have 501-750 students in their caseload. The majority 58.8% ($N = 10$) of the respondents identified the location of their school as a suburban setting, 23.5% ($N =$

4) identified as urban, and 23.5% ($N = 4$) identified as rural. Results demonstrated that there were student racial/ethnic composition rates of >75% White/European Americans, 10-25% of Hispanics/Latin Americans, <10% of Blacks/African Americans, Asian Americans/Pacific Islanders, Native Americans/Alaskan Natives, and non-specified groups being served at the different school sites.

School

Tables 5, 6, 7, and 8 list the annual frequency of height, weight, BMI, and BMI percentile screenings the surveyed nurses perform. Tables 9 through 17 focus on child-level obesity prevention tasks, including the frequency of reporting, providing counseling and consultation, and monitoring students.

Table 5

Annual Height Screening at School Sites (N = 18)

Screened	Frequency	%	Yes	No	%
Height	17	94.4	17	1	5.6%

Table 6

Annual Weight Screening at School Sites (N = 18)

Screened	Frequency	%	Yes	No	%
Weight	17	94.4	17	1	5.6%

Table 7

Annual Body Mass Index (BMI) Screening at School Sites (N=18)

Screened	Frequency	%	Yes	No	%
BMI	17	94.4	17	1	5.6%

Table 8

Annual BMI Percentile (Based on CDC Growth Charts) Screening at School Sites (N = 18)

Screened	Frequency	%	Yes	No	%
BMI Percentile	10	55.6	10	8	44.4%

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The majority of school nurses surveyed rarely contacts parents if they have concerns about a child's weight and rarely recommend parents contact a health provider for a child-related weight concern, as displayed by Tables 9 and 10, respectively.

Table 9

Contact Parent about Weight Concerns (N = 18)

Parent Contacted	Frequency	%
Never	5	27.78
Rarely	10	55.56
Sometimes	3	16.67
Often	0	0

Table 10

Recommend Parent Contact Health Provider about Weight Concerns (N = 18)

Recommended Parent	Frequency	%
Never	4	22.22
Rarely	10	55.56
Sometimes	4	22.22
Often	0	0

Tables, 11, 12, and 13 illustrate the majority of school nurses rarely counsel parents regarding a child-related weight concern, rarely counsel a child about his or her weight concern, and never consult with teachers about a student-related weight concern.

Table 11

Counsel Parent about Weight Concerns (N = 18)

Counseled Parent	Frequency	%
Never	6	33.33
Rarely	9	50.00
Sometimes	3	16.67
Often	0	0

Table 12

Counsel Child about Weight Concerns (N = 18)

Counseled Child	Frequency	%
Never	5	27.78
Rarely	7	38.89
Sometimes	6	33.33
Often	0	0

Table 13

Consult with Teacher about Weight Concerns (N = 18)

Consulted Teacher	Frequency	%
Never	8	44.44
Rarely	7	38.89
Sometimes	3	16.67
Often	0	0

As displayed by Tables 14 and 15, the surveyed school nurses reported never monitoring a child's weight because of a weight concern and sometimes checking the blood pressure of an overweight child.

Table 14

Monitor Child's Weight (N = 18)

Monitored Weight	Frequency	%
Never	8	44.44
Rarely	4	22.22
Sometimes	6	33.33
Often	0	0

Table 15

Check Blood Pressure of Overweight Child (N = 18)

Checked Blood Pressure	Frequency	%
Never	5	27.78
Rarely	6	33.33
Sometimes	7	38.89
Often	0	0

According to Tables 16 and 17, if a school nurse perceives a child to be overweight, the majority of the school nurses reported never checking the child's BMI and never using the BMI percentile (based on CDC age and gender growth charts) to assess a child's weight status.

Table 16

Check BMI of Child Perceived as Overweight (N = 18)

Checked BMI	Frequency	%
Never	11	61.11
Rarely	2	11.11
Sometimes	4	22.22
Often	1	5.56

Table 17

Use BMI Percentile (Based on CDC Growth Charts) to Assess Weight Status (N = 18)

Used Growth Charts	Frequency	%
Never	8	44.44
Rarely	2	11.11
Sometimes	5	27.78
Often	3	16.67

School-Level Obesity Prevention

Survey participants were given questions using a Likert scale to discover if school nurses were involved in school-level obesity prevention tasks during the school year. In this set of questions, participants were presented the following answer choices: never, rarely, sometimes, and often. Results revealed 44.44% (N = 8) sometimes reported when asked if school nurses

provided written information to parents, teachers, and/or students about nutrition and physical activity. Results showed 38.89% ($N = 7$) sometimes reported when asked if school nurses provided consultation to school administrators about health-related school policy. Results suggested 55.56% ($N = 10$) often participated as members of the school health council. Results indicated 33.33% ($N = 6$) never and 33.33% ($N = 6$) sometimes provided classroom health teaching on nutrition, and 38.89% ($N = 7$) sometimes provided classroom education on physical activity. The overall results of this section showed that school nurses collaborate with their school in obesity prevention the majority of the time, but there is a slight deficit of consistent school-level obesity prevention.

Tables 18 and 19 illustrate if school nurses monitored nutrition practices, like the food used in school fundraising and as incentives and rewards for students and if they monitored physical activity practices, like whether children have access to space and equipment for play before and after school.

Table 18

School Nurse Monitoring of Nutrition Practices (N = 18)

School Nutrition	Frequency	%
Never	8	44.44
Rarely	4	22.22
Sometimes	6	33.33
Often	0	0

Table 19

School Nurse Monitoring of Physical Activity Practices (N = 18)

Physical Activity	Frequency	%
Never	11	61.11
Rarely	5	27.78
Sometimes	2	11.11
Often	0	0

A Likert scale was used to discover if school nurses took part in school-level obesity prevention activities throughout the school year. In this set of questions, participants were presented the following answer choices: never, rarely, sometimes, and often. Results showed 50% ($N = 9$) never, 16.67% ($N = 3$) rarely, 33.33% ($N = 6$) sometimes, and 0% often assessed the nutrient quality of food and beverages offered students as part of school meals. Results indicated 66.67% ($N = 12$) never, 5.56% ($N = 1$) rarely, 27.78% ($N = 5$) sometimes, and 0% often assessed the nutrient quality of other foods and drinks sold to students at school, such as foods offered as a la carte, in vending machines, school stores, and for fundraising. Responses noted 38.89% ($N = 7$) never, 38.89% ($N = 7$) rarely, 22.22% ($N = 4$) sometimes, and 0% often wrote an article about healthy lifestyle habits for the school newsletter or website.

School Nurses' Opinions and Support from Others

A Likert scale was used with the following choices: strongly disagree, disagree, uncertain, agree, and strongly agree. Results showed 11.76% ($N = 2$) strongly disagree, 58.82% ($N = 10$) disagree, 23.53% ($N = 4$) uncertain, 5.88% ($N = 1$) agree, and 0% strongly agree that school nurses perceive that school health services should not be used for obesity prevention efforts.

Table 20 displays the results of the nurses' opinions regarding if schools should provide annual assessments of students' weight, height, and body mass index and make that information available to parents.

Table 20

School Nurse Annual Assessments of Weight, Height, and BMI (N = 17)

Should Provide Annual Assessments

& Make Info Available to Parents	Frequency	%
Strongly Disagree	0	0
Disagree	4	23.53
Uncertain	4	23.53
Agree	9	52.94
Strongly Agree	0	0

Table 21 shows that school nurses believe that they do not have adequate time to supervise and monitor obesity prevention efforts at school.

Table 21

Timing to Supervise and Monitor Obesity Prevention Efforts (N = 17)

Nurse Has Adequate Time	Frequency	%
Strongly Disagree	4	23.53
Disagree	10	58.82
Uncertain	3	17.65
Agree	0	0
Strongly Agree	0	0

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Table 22 displays the uncertainty of school nurses that teachers will support prevention efforts at their schools.

Table 22

Teachers Will Support Obesity Prevention Efforts (N = 17)

Teacher Support	Frequency	%
Strongly Disagree	1	5.88
Disagree	4	23.53
Uncertain	7	41.18
Agree	5	29.41
Strongly Agree	0	0

Table 23 illustrates the belief of school nurses that food service staff will support obesity prevention efforts at school.

Table 23

Food Service Staff Will Support Obesity Prevention Efforts (N = 17)

Food Service Staff Support	Frequency	%
Strongly Disagree	1	5.88
Disagree	0	0
Uncertain	6	35.29
Agree	8	47.06
Strongly Agree	2	11.76

Table 24 displays that some school nurses agree and some are uncertain about whether school administrators will support obesity prevention efforts at school.

Table 24

School Administrators Will Support Obesity Prevention Efforts (N = 17)

School Administrator Support	Frequency	%
Strongly Disagree	1	5.88
Disagree	2	11.76
Uncertain	7	41.18
Agree	7	41.18
Strongly Agree	0	0

Most school nurses agree that community health providers will support obesity prevention efforts at school, as displayed by Table 25.

Table 25

Community Health Providers Will Support Obesity Prevention Efforts (N = 17)

Community Health Provider Support	Frequency	%
Strongly Disagree	0	0
Disagree	2	11.76
Uncertain	6	35.29
Agree	8	47.06
Strongly Agree	1	5.88

Table 26 demonstrates the majority of school nurses do not feel prepared to supervise and monitor obesity prevention efforts at school, which could indicate a need for further nursing preparation and education about techniques to prevent and manage obesity in the school setting.

Table 26

Perception of Preparation to Supervise and Monitor Obesity Prevention Efforts (N = 17)

School Nurse Prepared	Frequency	%
Strongly Disagree	3	17.65
Disagree	6	35.29
Uncertain	5	29.41
Agree	3	17.65
Strongly Agree	0	0

Discussion

This study assessed elementary school nurses' perceptions of their roles in the management and prevention of obesity within the school environment. The survey tool consisted of five sections including school nursing practices, child-level obesity prevention tasks, school-level obesity prevention, support from others, and demographics. A convenience sample was used, and the survey was distributed electronically to the elementary school nurses of 35 schools in the Northwest Arkansas area.

This study demonstrated that elementary school nurses do not consider health education concerning obesity prevention or intervention is part of their role. Due to the design of this study, it is not known why elementary school nurses do not perceive this as part of their role. This may suggest that school nurses would benefit from more information about research on the subject of school nurses' perceptions of obesity management and prevention in the school setting. School

nursing is a complex practice, requiring an extensive knowledge base to work efficiently with many schools and community health providers to meet students' health needs. Due to feelings of lack of preparedness to supervise and monitor obesity prevention efforts at school, elementary school nurses may need further nursing preparation and education about programs to prevent and manage obesity in the school setting. School nurses could be a huge factor in preventing the spread of childhood obesity through collaborating with community organizations and community physicians.

Observed barriers include lack of procedures to implement obesity management and prevention programs and deficient funding to offer further educational training. However, most survey participants believe that obesity prevention efforts would be supported by teachers, food service staff, school administrators, and community health providers. Education would provide a benefit and remove barriers providing school nurses with the necessary information they need to address the growing issue of obesity, which is important to this study because the majority of the school nurses do not feel prepared to supervise and monitor obesity prevention efforts, nor do they feel as if they have adequate time to do so.

Another notable observation of this study included an unanticipated, personal email response from one of the participants. This elementary school nurse explained her roles in preventing and managing obesity, such as BMI screenings and mailing out the result letters, which is required by law. If she feels as though the student needs follow-up for complications of being overweight, she refers the student to the doctor. The result letter provides parents persuasive information to seek help and offers advice on nutrition and exercise practices, but she believes that most often, the parents ignore these letters. She also explains that the physical education team performs a fitness gram on each student twice a year and mails those results to

parents, which offers advice on how the student can perform better. The nurse agrees that obesity is a huge problem, which is only going to get worse and make health costs soar.

A weakness in this study that greatly influenced the results was the small sample size. Expanding the study to include more than one county and personally contacting each school nurse by telephone instead of only email would increase the sample size. Because the survey was anonymous, it was difficult to determine which nurses replied to the emailed survey and which nurses could have received additional follow-up. An increased sample size might increase the chances of finding statistical significance. Another suggestion, from the school nurse who submitted the outside response, is to ask how many students are on free or reduced breakfasts and lunches and to ask if the schools participated in a program called "Breakfast in the Classroom," a federally-funded program where students, no matter what income level, eat nutritionally well-balanced foods in the classroom. In her opinion, simply preaching healthy eating and exercise practices will not eliminate the obesity problem; rather, the school must stop selling candy bars and cookie dough as fundraisers and start serving whole foods instead of processed foods. This nurse's opinion displayed the need for school-wide interventions to prevent and manage childhood obesity.

There needs to be additional focus on increasing the time and support school nurses require to implement management and prevention of obesity at the elementary school level. School administrators, community leaders, and parents could develop a framework for nurses to participate in to gain appropriate education and training to make obesity management and prevention a team effort. School nursing presents numerous opportunities, but demands leadership and determination along with collaboration to initiate an effective obesity management and prevention program.

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